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AMERICAN MEDICINE AND THE SPIRIT OF ITS PROGRESS

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"It is apparent that the United States under its voluntary system of medical care has made greater progress in the application of medical and sanitary science than any other country. This progress is now reflected in low mortality and morbidity rates of infectious diseases and in increased life expectancy. There is every reason to believe that these trends will continue unabated under our present system of medical care.'

This paragraph is taken from the conclusions of the report from a study by the Brookings Institution made at the request of Senator H. Alexander Smith, Chairman of the Subcommittee on Labor and Public Welfare.

The conclusion from an objective and unbiased authority commands respect. Since medicine attained this high position in America, let us consider how we have maintained this superior service. I shall endeavor briefly to set forth my analysis of the factors that have made this progress possible. In order that our discussion may be more understandable, let us first define medicine in terms of research and use of discoveries and methods from many scientific fields and in terms of the service it renders to the individual patient.

Within human consciousness, man is the most complex product of nature. Medicine is based on the study of man and requires scientific knowledge of the processes on which life depends. The changes that occur in microscopic cells, cellular reproduction and embryologic development, growth, nutrition, metabolism and, finally, the processes of ageing comprise the universal sequence in the progress of living.

Illness may result from inherited deficiencies, failures of normal body functions or physiologic accidents. These, too, are necessary fields of study in acquiring medical knowledge of man. But man is associated with everything in nature, so that disease may arise from any contacts or deficiences in man's environment. The chemical and moisture content of air, sunshine and temperature may be favorable or unfavorable to health. The recognition of viruses, microbes and parasites that cause disease and necessary protection from them are also a part of medicine. The manner of conveyance of disease by contact with sufferers from the disease or animal carriers is of established importance.

In the treatment of disease, medicine must be familiar with normal physiologic function and methods of restoration from disturbance of such function to normal. As agents in treatment, medicine takes from botany various plant products, from chemistry the substances needed to supply deficiencies and to destroy bacteria. From the blood come protective factors and serums. From electrical energy, special currents are used for various purposes, and radioactive products are employed for the destruction of diseased tissues. Last, but perhaps foremost, is discussion of the tremendous area of the emotional life of man, varying from the normal psychology of life to the medical problems of the abnormal. Again medical science must explore a great area of human development and social experience. The normal emotional development from infancy to maturity, the interests, incentives and happiness of man and the problems of immaturity, maladjustment, frustration or the extremes of crime and psychosis are vital medical interests.

This somewhat lengthy inventory is an indication of the considerations necessary in an effort to appraise medicine, its dimensions and progress. High standards of medical education and careful selection of students are important to the progress of a professional service of such broad scientific basis.

MEDICAL EDUCATION

A long and arduous course of training is necessary to equip physicians to provide a high quality of medical service. The formal educational program of students of medicine, therefore, requires a minimum of seven years. Special training requires several additional years. But, more than this, progress in medicine is so rapid that the effective physician must continue to be a student and research

Address of the President of the American Medical Association delivered before the Ninety-Seventh Annual Session at Chicago, June 22, 1948.

observer throughout his entire professional career. His value to his patients will depend on this scientific qualification, to which must be added the indescribable humanity, sympathetic interest, clear judgment and inspired responsibility which produce the best service to the sufferer. Therefore, medical students are carefully selected, and the course in preparation for medicine is longer than that required in most other professional fields.

As a result of this scientific preparation and organization of effort, medical science in the United States has attained remarkable results and medicine continues to progress in advance of social progress. Men live in the United States in good health to greater average age than ever before in the history of any nation. The general levels of health and added longevity accomplished by health education, medical research and development and the use of new methods in prevention and treatment of disease mark scientific advances in medicine unequalled in any comparable division of science.

The benefits of those advances have been effective in the reduction of the incidence of disease, shortening of the periods of illness and lengthening of life in all income groups. This superior comprehensive service, despite general economic inflation, has been delivered to the individual patient with a minimum increase in physicians' fees despite vast increases in cost of various commodities and labor. These increased costs of materials used by physicians and maintenance expense have reflected on the physician as well as the patient. Hospital costs to the patient have necessarily reflected the increased costs of food, supplies, labor and materials in the same proportion as they have reflected on the civilian public.

INADVISABILITY OF GOVERNMENTAL PLANS

The fact that scientific advances in medicine have progressed much more rapidly and to a point far in advance of social and economic thinking is evident in proposed governmental plans for changing our system of medical care. These plans are seldom concerned with better or more effective mechanisms to advance the quality of medical care. They provide little or nothing new to advance the levels of health or happiness. Finally, a consideration of the operation of plans in effect in other nations reveals no evidence to recommend them for use in the United States, where already higher levels of health care are available to more people than anywhere else in the world.

The economic levels, or the standards of living, in the United States are much higher than in other countries. The areas in this country in which present medical standards are economically impossible are minimal in number as compared with the total nation. Education in health and some improvement of medical facilities will require only local effort with possibly some assistance from national resources, but not governmental interference, with the inevitable deterioration of the medical service of the whole nation. If a local area is economically able to correct conditions, this effort should be encouraged. If outside aid is necessary, it may come from federal tax funds derived from general taxes applied to all income groups. Federal aid for medical care should not be taken from funds derived from taxes improperly called insurance and applied only to lower income groups of employees. One wonders at the shortsightedness of labor leaders who advocate legislation that depreciates the civic status of those they represent.

Better social thinking could be directed to better education in healthful living; encouragement to cooperation between labor and employers in industrial health efforts; better housing; education in nutrition; encouragement in wholesome recreation; incentive or assistance through local autonomies in the building of health facilities such as hospitals; stimulation of interest and pride in health activities, and encouragement to voluntary insurance plans against costs of illness.

Especially constructive and much needed now is planning of happier years for people in the older age groups. Existing economic practice excludes men from employment after age 65 and places in idleness and unhappiness many whose experience and capacity would still be useful. With average ages now approximately 67 or 68 years, many men and women now 65 years old will still be living in 1970. Medical progress is constantly extending the life expectancy of human beings. According to recent statistical studies, in 1900 there were about 3,000,000 persons in the United States aged 65 or over. In 1940, there were 9,000,000 aged 65 or over. Estimates suggest that there will be 14,000,000 aged 65 or over by 1960 and 21,500,000 in that age group by the year 2,000.

The three highest ranking causes of death, heart disease, cancer and hardening of the arteries with cerebral hemorrhage, are diseases of the older ages. Nephritis, diabetes and general arteriosclerosis are also in this older age group. More research is now being directed to these degenerative diseases of the older age group. Much may be done in prevention of these diseases by educational programs, good living habits and recreation.

Medicine is constantly exploring new fields pertaining to body function, health and disease. As a result, scientific theory continues to advance. Many physicians in all parts of the country apply themselves to these scientific leads, and discoveries of great importance to the extension of healthy living may be developed at any time. Scientific research is the accomplishment of unusual mental capacity and training. Experience has shown that it does not flourish in a political atmosphere. If social thinking is to follow a proper course of evaluation of methods, it

should not deal in the abstract as if groups were the ultimate units of interest and that service is, therefore, best directed by government.

The individual is important in modern civilization. Each human being is a more complex structure than any social system to which he belongs. As far as medical service is concerned, the best medical care is concerned with prolonging one life for one individual.

Physical sickness is always accompanied by mental and spiritual problems. Medical service must be directed to the whole man. The completeness of his recovery may depend on his mental appraisal of himself, on new outlook, renewed confidence and possibly adjustment to conditions which the individual is powerless to correct. The survival of a normal personality, even with an impared body, is vital to the health of man.

The individual human being may occupy a position in the social structure in which his particular tasks and kind of employment in industry are predetermined by others and are not within his control. The maintenance of a proper respect for the personal identity of of that patient in his efforts to recover physical and mental health is recognized as supreme by medical science. In this contact, the patient must have confidence in his physician, and the physician must be interested in and fully cognizant of his responsibility to the patient. Political medicine lacks the spirit necessary for that service.

Individual medical service goes beyond the treatment of disease. Preventive medicine in the field of general protective measures, water and food sources, vaccination and quarantine are of necessity carried on by governmental organizations. But each person is sick or unhappy in his own way. Preventive medicine, in addition to the general plan, must be directed to the individual patient and his needs for special protection. Again, this requires the individual physician.

Physicians are rapidly expanding preventive service as patients request routine examinations of sufficient detail to determine general health and advice as to future health measures and general plan of living.

Another service of medicine, as yet without distinctive name, has to do with the potential capacities and fitness of an individual for certain fields of endeavor. Many men consult their physicians before undertaking any new enterprise that will require physical or mental or possible emotional change from past patterns. This is a most important personal service. Social thinking should recognize the importance of this service, which will no doubt increase.

The physician continues to extend greater service to the individual. Every important advance in health planning, governmental and civilian, and the superior quality of medical service provided have been fostered by and supported by physicians. Without that support, not one could function. Great harm may be done by overemphasis on the value and the importance of the assumption of authority by the social organization. The value of a social system lies in its provision of opportunity and certain social values to the individual. Any over-all usefulness will depend on the actual, not mythical, value of its function to each person.

The American nation has been described by sociologists as the only instance in which large masses of civilized mankind have enjoyed a regime of unqualified individualism. Modern mass production and mass distribution, city congestion and social structures of increasing complexity have restricted some of the industrial individualism that was America. The individualism of personality must be protected. Psychology of the future must apply itself to the study of values of human life and a proper regard for the need of aims, opportunities for individual interests and progress. Even a consideration of the role of esthetics in human contentment has been named as an important study. Apparently, sufficient social thought has not been directed to these fields.

THE NATIONAL HEALTH PROGRAM

The American Medical Association has long been a close observer of the government-controlled plans of foreign countries designed mainly for peasants and workers with low incomes and with a high percentage of indigency and little medical care. But the situation in America is different and American medicine is planning for a people who already have the highest quality of medical care in the world.

The National Health Program of the American Medical Association is a much broader program than any promoted by advocates of government compulsory plans. The program provides for the interweaving of all the agencies of community life to attain the maximum of results of health and happiness by voluntary effort and individual freedom, government aids to be utilized only in those areas in which the individual and the community require that assistance.

The American Medical Association program indicates the need for standards of nutrition, housing, clothing and recreation. It emphasizes the important of preventive medicine and public health service. Prenatal care, childbirth, infant welfare and child care are recognized as specialized services in which community effort is helpful. Hospitals and health centers are encouraged to meet the need of the communities they serve, and voluntary prepayment plans for hospital and medical care are promoted to finance adequate service. Veterans' care of good standard supplied to those with service-connected disabilities or in need are an obligation of good government. Medical research is fundamental to progress. The voluntary health agencies have developed uniquely in the United States. Health education and fulness of wholesome living round out our health program.

Let social groups now advocating foreign plans turn instead to the American Medical Association in the fulness of an American health program. Present unprecedented health standards are the accomplishment of American medicine in plans and effects, and they will continue to progress. Medicine must and will provide leadership in health.

THE WORLD MEDICAL ASSOCIATION

But medicine must be at the same time local, national and worldwide. Wherever man lives, health is important. The American Medical Association participated in the organization of The World Medical Association in Paris, France, on Sept. 18, 1947. Forty-seven nations were represented in this organization meeting. A meeting of the association will be held in Geneva, Switzerland, in September of this year.

Among the objectives of the World Medical Association are: (1) to promote closer ties among the national medical organizations and among the doctors of the world by personal contact and all other means possible; (2) to study and report on the professional problems which confront the medical profession; (3) to organize and exchange of information on matters of interest to the medical profession; (4) to establish relations with and to present the view of the medical profession to the World Health Organization, UNESCO and other appropriate bodies; (5) to assist all peoples of the world to attain the highest possible level of health, and (6) to promote world peace.

The great world interest in this new medium of world understanding seems to assure an effective future for this organization. Its cooperation is essential to maximum functioning of the World Health Organization.

Medicine is the oldest of the professions. Man owes more of his present advanced status to medicine than to any other field of learning. Without freedom from attenuating disease and without sufficient days of life, education, culture and progress would have been impossible.

The consideration of health needs common to all nations, a better understanding and assistance in the development of the best possible medical service to the whole world is a new thought and an opportunity of promise. If medicine, the oldest and most effective service to man, can assist the world to a greater measure of health, given a reasonable opportunity for happy living, more progress may be made toward a lasting peace than government has been able to accomplish throughout years of war.

CONCLUSION

American medicine has grown to its present high position in science and its unequalled service to the public by progress under the principles set forth by the founders of the nation: (1) the greatest freedom of the individual to control his own personal matters not subservient to the state; (2) the provision to the individual patient of the best possible medical service by his individual physician, not by the political employee of the state; (3) the opportunity of the individual physician to progress to greater scientific attainments and better medical service, free from the deteriorating influence of government political control.

This, in analysis, is the spirit of the progress of American medicine.

SYMPATHECTOMY FOR ESSENTIAL HYPERTENSION

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In the past fifteen years, sympathectomy has been carried out for essential hypertension in several thousand patients. Notwithstanding the analysis of much of this material, not even an approach to unanimity as to the value of the operation has been attained. Opinions vary from the belief [1] that sympathectomy is indicated in a high proportion of patients with essential hypertension to the view [2] that the operation is of little more value than symptomatic management.

Almost all the larger series [3] of sympathectomies have been reported by surgeons who performed the operation on patients referred by different physicians. This paper is based on patients selected for operation by a single internist and followed by him after operation. The report thus represents an evaluation of sympathectomy from the point of view of a physician who is at the same time treating other—many more—hypertensive patients without operation and has thus a control in his own experience for assessment of the symptomatic results. The observations seemed, further, to throw light on the mechanism of symptomatic relief by sympathectomy, as well as on the pathogenesis of the cerebral and retinal manifestations of hypertension.

MATERIAL

The 119 patients had essential hypertension, so far as could be determined by means short of renal biopsy. When there seemed to be doubt whether the hypertension was essential or due to glomerulonephritis or pyelonephritis, operation was not performed. Two of the patients had Adson's [4] infradiaphragmatic sympathectomy, 8 Peet's [1] supradiaphragmatic operation and 109 Smithwick's [5] thoracolumbar sympathectomy.

SELECTION OF PATIENTS

Sympathectomy was advised or rejected on the basis of the following indications and contraindications:

Indications for Sympathectomy.—The clinical manifestations which mainly motivated the decision to operate were one or more of the following:

Headache was experienced by 83 patients. It was severe and not satisfactorily relieved by "medical treat-

From The Joseph and Helen Yeamans Levy Foundation in Memory of Miriam Levy Finn, Beth Israel Hospital, New York.

1. Peet, M. M., and Isberg, E. M.: The Surgical Treatment of Arterial Hypertension, J. A. M. A. **130**: 467 (Feb. 23) 1946.
2. Goldring, W., and Chasis, H.: Hypertension and Hypertensive Disease, New York, The Commonwealth Fund, 1944, p. 157.
3. Grimson, K. S.: The Surgical Treatment of Hypertension, in Dock, W.; Snapper, I., and others: Advances in Internal Medicine, New York, Interscience Publishers, Inc., 1947, vol. 2, p. 173.
4. Adson, A. W., and Allen, E. V.: Essential Hypertension: II. The Rationale and Methods of Surgical Treatment, Proc. Staff Meet., Mayo Clin. **12**: 49 (Jan. 27) 1937.
5. Smithwick, R. H.: A Technique for Splanchnic Resection in Hypertension, Surgery **7**: 1 (Jan.) 1940.

ment." Most often the headache was so severe that the sufferer was willihg to undergo operation merely for the relief of this one symptom, whether or not the hypertension was significantly reduced. Twenty-three patients had retinal lesions. Of these, 17 had papilledema, almost always with hemorrhages and exudates; 6 had hemorrhages and/or exudates; and 2 had thrombosis of a central vein. Congestive heart failure improved by preoperative treatment to a state of tolerable compensation with normal circulation time and venous pressure was present in 11 patients. Eight patients had cerebral hemorrhage; 8 patients restlessness and fatigability of incapacitating severity (never taken as the sole indication); 4 patients convulsions due to hypertensive encephalopathy; and 1 patient Raynaud-like symptoms. Nineteen patients were asymptomatic with high and rising diastolic pressure (over 130 mm. in a majority of repeated examinations).

Contraindications to Sympathectomy.—The patients operated on did not have any of the following contraindications: 1. Pronounced impairment of renal function. No patients were operated on in whom the nonprotein nitrogen of the blood exceeded 40 mg. per hundred cubic centimeters or who were unable to concentrate the urine to a specific gravity of 1.019 or more. 2. Congestive failure not relieved by treatment. However, several patients were operated on in whom gallop rhythm persisted. 3. Auricular fibrillation, flutter or heart block. After a patient with frequent ventricular extrasystoles not eliminated by quinidine died suddenly while being wheeled from the operating table, none with this arrhythmia were operated on. 4. Cardiac pain occurring paroxysmally, generally constricting in nature, relieved by glyceryl trinitrate and considered probably to indicate high grade coronary narrowing by arteriosclerosis with resultant coronary insufficiency. On the other hand, dull precordial ache often present for hours and unaffected by nitroglycerin was not taken as a contraindication. The reasons for the exclusion of patients with anginal pain soon after the beginning of the series were the sudden death of 1 such patient two days after operation from acute coronary insufficiency and the a priori probability that sudden fall in blood pressure may precipitate coronary insufficiency when the coronary arteries are much narrowed. 5. Evidence of widespread, high grade cerebral arteriosclerosis in the form of repeated cerebral vascular accidents, mental deterioration or depression. However, a single cerebral hemorrhage was not taken as a contraindication and sometimes was evaluated as favoring operation. 6. No patients were operated on in whom diastolic pressure did not exceed 110 mm. in a majority of repeated examinations. 7. Because of the probability of much arteriosclerosis, operation was not advised in patients over 55 years. In those between 50 and 55 years, operation was advised only with extreme circumspection and because of either insufferable headache or retinal lesions.

The effect of three hourly doses of 0.2 Gm. of "amytal sodium" on the blood pressure was observed preoperatively in most of the patients. The test did not prove of much help in selection of patients. There was some correlation between the fall in blood pressure resulting from the hypnotic and the outcome of the operation, but it was not close and there were many discrepancies. Moreover, pronounced fall in blood pressure repeatedly followed administration of "amytal sodium" in patients with nephritic hypertension or who were revealed by azotemia to be unsuitable for operation.

In deciding whether sympathectomy was called for, stress was laid on the analysis of the clinical picture into the part directly due to hypertension and that due to arteriosclerosis. Thus, hypertension and coronary arteriosclerosis are of varying relative importance in the pathogenesis of heart failure in different hypertensive patients. Likewise, hypertension and cerebral arteriosclerosis vary in their contribution to headache and other cerebral symptoms in persons with essential hypertension. Those symptoms which are due to arteriosclerosis will not be helped and may be aggravated by sympathectomy; e.g., coronary insufficiency following operation in persons with severe coronary arteriosclerosis and deep mental depression after sympathectomy in those with cerebral arteriosclerosis (both observed in this series). Smithwick's [6] observation that the results of sympathectomy are less satisfactory when the pulse pressure is high probably is explained by the high pulse pressure manifesting severe arteriosclerosis of the aorta and other large arteries.

BENEFITS OF SYMPATHECTOMY

Sympathectomy has both benefits and untoward effects; evaluation of the operation demands that advantages and disadvantages be counterbalanced. In these observations the benefits were as follows:

1. *Lowering of Blood Pressure.*—At the last measurement the diastolic pressure was 25 per cent or more below the preoperative level in 25 per cent of the patients and systolic pressure had fallen similarly in 32 per cent. In 18 per cent the last blood pressure reading was 150 mm. systolic and 100 mm. diastolic or less.

The most striking effect on the blood pressure was in the following case:

A man of 36 years was known for three years to have essential hypertension. He had severe occipital headaches during this period. Preoperative blood pressure averaged 200 mm. systolic and 135 mm. diastolic; he had narrowed retinal arterioles with arteriovenous compression. He underwent thoracolumbar sympathectomy in December 1941. He has felt entirely well since recuperating from the operation and has worked hard. In October 1947, his blood pressure was 116 mm. systolic and 75 mm. diastolic.

From Table 1 it will be noted that in each age group the blood pressure averages lower than the preoperative level. The 119 patients had an average preoperative blood pressure of 218 mm. systolic and 135 mm. diastolic; at the last examination, which averaged thirty-two months after operation, the average blood pressure was 184 mm. systolic and 118 mm. diastolic. There was thus an average fall in systolic pressure of 16 per cent and in diastolic pressure of 13 per cent.

While the natural history of essential hypertension exhibits pronounced fluctuation in the blood pressure, the tension in untreated patients usually does not tend to fall over a protracted period. Inasmuch as almost all the patients in this series were given "medical treatment" for months or years before operation, it seems definite that the fall in pressure after the operation is the result of the sympathectomy.

In most patients the pressure falls close to normal for a postoperative period of weeks or a few months. This period is too brief to be of much significance, and is not included in the tables. Most often the pressure then gradually rises. However, in some the pressure has remained below 150 mm. systolic and 100 mm. diastolic for periods of observation up to almost six years (table 2). In interpreting the relatively high proportion of such satisfactory pressure levels in the group followed for be-

6. Smithwick, R. H.: The Surgical Treatment of Hypertension, New York State J. Med. **44**: 2693 (Dec. 15) 1944.

tween forty-nine and seventy-two months, it should be borne in mind that 20 patients—including those responding least well to sympathectomy—had succumbed at earlier periods. Moreover, 2 of these patients had had myocardial infarction long after the operation, which presumably participated in keeping the blood pressure down.

TABLE 1.—*Results of Sympathectomy in Essential Hypertension*

Age	20-29	30-39	40-49	50-55	Total
Patients	8	40	66	5	119
Follow-up (months)					
Average	40	34	30	35	32
13-24	1	10	28	1	40
25-48	4	19	22	3	48
49-72	3	7	7	1	18
Over 72		2	1		3
Operative Deaths			4		4
Later Deaths		8	10		18
Average Preoperative Blood Pressure	196/129	214/137	220/134	228/133	218/135
Average Postoperative Blood Pressure *	156/106	188/121	183/119	180/111	184/118
Blood Pressure Under 150/100 *	1	9	11	1	22
Systolic Blood Pressure 25% Lower *	2	12	22	2	38
Diastolic Blood Pressure 25% Lower *	3	12	16	1	32
Systolic Blood Pressure Higher *	1	4	10	1	16
Diastolic Blood Pressure Higher *	1	8	11	1	21
Worth While Symptomatic Improvement *	4	23	29	3	59

* Findings at the last examination.

2. *Symptomatic Improvement.*—It is obviously difficult to assess symptomatic improvement. There is often great fluctuation in the symptoms of untreated patients; for no discernible reason, such symptoms as headache, vertigo, restlessness and precordial pain may disappear for months or years. However, once severe symptoms have set in, such spontaneous improvement for more than a few months is much the exception. Of the 119 patients, 100 had symptoms due to hypertension; of these 100, at the last examination there was symptomatic improvement which seemed "worth while" to me in 59. In others there was symptomatic relief for a shorter period, but symptoms of considerable severity had returned before the last examination; these results were not regarded as worth while in this evaluation.

TABLE 2.—*Results at Successive Periods After Sympathectomy*

Time After Operation (Months)	Patients	Blood Pressure Under 150/100 mm.	Diastolic Blood Pressure 25% Lower	Worth While Symptomatic Improvement	Deaths
13-24	40	10	13	22	10*
25-48	48	6	12	24	6
49-72	18	6	7	12	1
72 plus	3			1	1

*These 10 deaths occurred in the first twenty-four months (6 in the first year); they do not include 4 operative deaths.

The symptom most often relieved by the operation was headache. Of the 83 patients who suffered from headaches so severe that they were a factor in impelling operation, 64 had no or only slight headache up to the time of the last examination. Among those completely relieved were patients who had suffered from headache for five to fifteen years. Most often completely relieved was a type of headache especially apt to result from hypertension, namely, occipital headache frequently radiating down the back of the neck, present when the patient awakens, and often relieved after he gets up and about. Headache was repeatedly relieved in patients in whom there was little change in blood pressure.

Other cerebral symptoms of hypertension, notably restlessness, pounding in the head, inability to concentrate and vertigo, were also relieved in a high proportion of the sufferers. The convulsions of hypertensive encephalopathy did not recur in any of the 4 patients who had had them.

Impairment of vision due to retinopathy was several times improved.

These observations contain less data on the effect of sympathectomy on the cardiac symptoms of hypertension because patients with manifest heart failure or angina pectoris were excluded. However, in several instances gallop rhythm disappeared after operation, the inverted T waves indicative of left ventricular strain became upright, and the enlarged heart decreased in size. Dull precordial pain disappeared several times. In 1 patient not included in this series—a physician, who was operated on against my advice—high grade left ventricular failure, which had incapacitated the patient for months, cleared up so completely after operation that the patient has been able to practice actively for five years since.

No patients with significantly impaired renal function are included in this series. However, I have seen several persons with bad renal function who underwent sympathectomy on the advice of others; in none was the performance of the kidney improved. This is contrary to the findings of Peet and his associates,[1] who have observed improvement in renal function. The albuminuria of more than minimal degree present in 28 cases was not definitely affected.

3. *Clearing of Retinal Lesions.*—Few manifestations of hypertension imply a worse prognosis than neuroretinopathy. For this reason, the rapid improvement in the fundus that often follows sympathectomy is as significant as it is striking. Seventeen of the patients had papilledema, accompanied in 15 by hemorrhages and exudates. After operation, the papilledema, hemorrhages and exudates cleared (sometimes leaving residua) in 12 cases. In the 4 instances of longest duration of improvement, the disk and retina are still normal seventy-one, sixty-nine, fifty-two and forty-five months after sympathectomy. In 3 patients the retinal lesions recurred after complete clearing. Of the 17 patients with hypertensive neuroretinopathy, 10 are still alive. Of the 7 who died, 5 were patients in whom the fundus never cleared, while the remaining 2 succumbed to heart failure without recurrence of the retinal lesions.

4. *Economic Rehabilitation.*—Many of the patients who were unable to work for months prior to operation because of headache, restlessness, weakness or other symptoms were economically rehabilitated so that they returned to their occupation or household duties. Sometimes the rehabilitation was only transitory, but in others it has already lasted from two to six years. A dentist who was unable to practice for a year before operation put in a full day's work for four years after sympathectomy until he suffered a myocardial infarction; the headache and restlessness which had incapacitated him did not return.

5. *Prolongation of Life.*—The question whether sympathectomy prolongs life is difficult to answer because of inability to estimate even roughly what the duration of life would have been without surgical treatment It would seem that in those cases in which the blood pressure is strikingly and protractedly lowered with decrease in the size of the enlarged heart and disappearance of the electrocardiographic pattern of left ventricular strain, the operation should tend to prolong life. The best objective evidence that sympathectomy prolongs life in some patients is afforded, as pointed out by

Peet,[1] by patients with neuroretinopathy. For hypertensive neuroretinopathy (papilledema, usually with hemorrhages and exudates) to disappear completely in the natural course of the malignant phase of essential hypertension is so rare as to constitute a clinical curiosity, although it apparently occurs less rarely with rigid restriction of sodium chloride. Such clearing occurred in 12 of 17 cases. Moreover, of the 17 patients with hypertensive neuroretinopathy, 10 are still alive; 6 of these have survived over three years since operation. The 2 who have survived longest feel well and are without retinal lesions seventy-one and sixty-nine months after sympathectomy. Inasmuch as about 90 per cent of patients with papilledema due to essential hypertension succumb within two years, there would seem to be little doubt that sympathectomy has prolonged life, and usefully so, in some of these patients.

UNTOWARD EFFECTS OF SYMPATHECTOMY

Unfortunately, in addition to these benefits, sympathectomy also has its disadvantages:

1. The operative mortality in this series was 3.5 per cent. This mortality occurred notwithstanding that only patients were operated on who seemed to be as good surgical risks as can be expected in persons with severe hypertension. However, 1 patient who died early in the series had angina pectoris and would not now be operated on. But even the most painstaking selection cannot entirely eliminate the operative risk; another operative death occurred in an asymptomatic man of 40 years who was operated on only because his blood pressure had risen rather rapidly to 230 mm. systolic and 140 mm. diastolic.

2. Extensive thoracolumbar sympathectomy in two stages usually entails much postoperative discomfort or even suffering. In our cases the period of hospitalization averaged well over one month. Entry into the pleura, infection and other complications often aggravate the patient's ordeal.

3. Following operation there is often a period of many months or even a year or more in which orthostatic hypotension causes discomfort, although this can be mitigated by elastic bandages and lower abdominal compression. Neuritic pains in the back or of girdle-like distribution are sometimes severe for many months. Cold hands may be annoying.

4. The economic burden is often great. It is unusual for the patient to be able to return to his occupation in less than three months and often it is longer.

5. Resection of lumbar ganglions often results in absence of ejaculation with resultant sterility.

6. Sympathectomy is at best a palliative and not a curative procedure. Despite the frequently pronounced and protracted lowering of blood pressure and symptomatic improvement, not 1 patient in this series is regarded as "cured." In every instance, the last examination revealed evidence of hypertensive disease. In the large majority of instances the blood pressure was still definitely above normal. But even when frequent readings below 150 mm. systolic and 100 mm. diastolic were obtained, occasional rises above this level revealed the persistence of the underlying hypertensive disease. Further evidence of abnormal vasoconstriction in the areas not affected by the sympathectomy was narrowing of the retinal arterioles even in patients with lowered blood pressure.

7. Arteriosclerotic symptoms may be aggravated. A large proportion of patients with essential hypertension have advanced sclerosis of large arteries in various parts of the body. With the fall in blood pressure produced by sympathectomy, manifestations of inadequate blood flow through these narrowed arteries may first appear or increase. Two of the patients first experienced intermittent claudication of the lower extremities when arising after operation. In several instances angina pectoris first appeared within two years after operation, which produced much lower blood pressure, in patients without previous cardiac symptoms; there were 7 deaths from myocardial infarction. Several patients whose blood pressure had been lowered experienced severe depression after operation; 1 committed suicide. In these patients, who had not been depressed before operation, inadequate cerebral blood flow seemed the most likely explanation. When the arteriosclerotic symptoms first appeared soon after the operation, fall in blood pressure probably reduced the blood flow; in those in whom coronary insufficiency or other arteriosclerotic manifestations developed months or years after operation, progression of the arteriosclerosis was presumably the important factor. After the first year, deaths are most often due to arteriosclerotic complications in the heart or brain.

MECHANISM OF RELIEF OF HEADACHE AND RETINOPATHY

From table 1 it can be seen that at the last examination the blood pressure was below 150 mm. systolic and 100 mm. diastolic in 22 of the 119 patients. The diastolic pressure was 25 per cent or more below the preoperative level in 30 of the 119 patients (including all those with pressure below 150 mm. systolic and 100 mm. diastolic) or 25 per cent. On the other hand, worth while symptomatic improvement occurred in 59 patients. Since 19 of the 119 patients were asymptomatic before operation, worth while symptomatic improvement was obtained in 59 per cent of those with symptoms.[7]

Worth while symptomatic improvement thus occurred more than twice as often as did a fall in diastolic pressure of 25 per cent or more. Moreover, there were several patients with striking and protracted symptomatic improvement despite no fall in blood pressure or in whom the systolic and diastolic pressures were higher than preoperatively.

In the large majority of the cases, most of what is here termed "worth while symptomatic improvement" applies to headache and, less often, retinopathy. In most of the patients, headache, severe and frequent before operation, disappeared. One had almost continuous headaches for four months before operation and another frequent headaches for fifteen years; neither has had any headache in the more than two years since operation. In several cases headache, severe before sympathectomy, never returned despite the fact that the pressure remained high and the patient succumbed to cardiac or renal failure. Likewise, clearing of retinopathy was observed without fall in pressure.

The remarkable frequency with which headache and retinopathy are eliminated by sympathectomy has been noted since the first operations, but the mechanism of relief has not been entirely elucidated. Reduction in blood pressure and decrease in pressor response to emotional and other stimuli doubtless are primary factors in relief of headache and retinopathy ("albuminuric retinitis" never devolops except in the wake of diastolic hypertension). But these mechanisms do not operate in the numerous cases in which headache and retinopathy vanish after operation despite little change in blood pressure

7. It will be noted that worth while symptomatic improvement occurred in a smaller proportion than did relief of headache. The reason is that in some patients headache disappeared, but cardiac or other symptoms progressed.

or even a rise. Observations made in the course of this study indicate that the mechanism by which sympathectomy may relieve headache and retinopathy even when the blood pressure is unaltered is a redistribution of blood so that a smaller fraction of the cardiac output is distributed to the cephalic portions of the body with resultant decrease in blood flow to the head. The phenomena which bespeak such a redistribution of blood are:

1. After sympathectomy, the narrowing of the retinal arterioles present in severe hypertension persists. This is the observation which originally suggested that the often remarkable relief of the cephalic symptoms of hypertension by sympathectomy may be due to redistribution of blood with diminished cranial blood flow. It has been stated that the constriction of the retinal arterioles may be relaxed after operation. Despite careful comparative observations before and after sympathectomy for several years, I have not been able to detect such relaxation. The caliber of the arterioles has not been augmented by the operation, the narrowing present before sympathectomy persisting. This has been the case whether or not the blood pressure has been lowered and whether or not retinal lesions cleared up.

The persistence of the narrowing of the arterioles of the retina is really what one would anticipate, for this vascular territory is not denervated.

2. In at least the first months after operation the hands of the patient on whom sympathectomy has been done are generally cooler than before operation. Contrariwise, the feet are warmer. Normally, the hands are warmer than the feet, but this is reversed after adequate sympathectomy (table 3). The cold hands and warm feet indicate the redistribution of blood flow toward the caudal parts of the body.

TABLE 3.—*Skin Temperature Before and One Month After Thoracolumbar Sympathectomy*

	Preoperative	Postoperative
Forehead	94F.	93F.
Nose	94	89
Cheek	96	94
Chin	95	94
Ear	92	89
Chest	94	94
Abdomen	92	94
Arm	94	91
Forearm	94	90
Wrist	93	89
Palm	94	88
Thumb	92	85
Thigh	90	94
Knee	90	92
Ankle	85	93
Dorsum of foot	85	95
Toe	73	95
Sole	76	94
Heel	75	93

3. Orthostatic hypotension may occur. For months after operation fall in blood pressure in the erect posture with resultant giddiness and even blackouts may be an annoying feature. The denervation of the vessels in the caudal parts of the body prevents the reflex vasoconstriction which participates importantly in the maintenance of arterial pressure in the erect posture. The consequence is that assumption of the erect posture is accompanied by fall in arterial pressure, pooling of blood in the caudal parts of the body and decrease in cerebral blood flow.

The redistribution of the blood is a manifestation of the very nature of the operation. A primary function of the sympathetic innervation of the vessels is the regulation of the distribution of the cardiac output. Thus during exercise vasoconstrictor impulses over the splanchnic nerves divert blood to the extremities, while during digestion stimuli over the vasoconstrictor nerves of the peripheral vessels shift blood to the splanchnic area. Thoracolumbar sympathectomy denervates the vessels of the caudal but not of the cephalic parts of the body. The result is a change in the pattern of the peripheral resistance to blood flow which consists in diminution in resistance in the caudal regions of the body with no change (if not an increase) in the cephalic parts. The consequence can only be an increase in the fraction of the total cardiac output (known to be unchanged) which flows to the caudal parts of the body and a corresponding decrease in the volume of blood flow to the cephalic regions.

There are several clinical circumstances in which diminution in blood flow to the head seems to be associated with relief from hypertensive headache. Few hypertensive patients with pronounced heart failure complain seriously of headache. The development of heart failure in hypertensive patients with headache is accompanied by disappearance of the headache even though the diastolic pressure remains high. Phlebotomy has long been used to treat intractable hypertensive headache. Perhaps the most characteristic form of headache due to hypertension is one which awakens the patient in the morning after long hours of recumbency; such headache is frequently alleviated when the patient gets up and about, and Allen [8] pointed out that the headache can sometimes be averted by having the patient sleep with the head of the bed elevated.

The identity of the pain-sensitive structures responsible for hypertensive headache is not known. The fact that sympathectomy may relieve the headache without change in blood pressure points to the possibility that the headache is due to distention of and rise in pressure in the postarteriolar vessels (capillaries and veins). There is evidence (Cobb [9]) that the cerebral arterioles constrict as a result of nervous stimulation much less forcefully than the extracranial arterioles. In hypertension there may be, as a result of the less forceful constriction of the cerebral arterioles, a rise in cerebral capillary pressure, which decrease in blood flow to the head following sympathectomy tends to counteract.

Retinopathy.—The remarkable frequency with which sympathectomy is followed by disappearance of papilledema, exudates and hemorrhages has been observed before and was striking in these observations. Clearing of the retinopathy was observed not only in patients in whom the blood pressure was reduced, but also when the pressure did not fall or even rose. Thus, in a man of 53 years operated on too recently for inclusion in this series, headache present almost daily for five months before operation and retinopathy (papilledema, hemorrhages, exudates) have disappeared in the face of rise in blood pressure from a preoperative level of about 200 mm. systolic and 130 mm. diastolic to 230 mm. systolic and 140 mm. diastolic with peaks as high as 270 mm. systolic and 160 mm. diastolic.

Ophthalmoscopic observations before and after operation showed no increase in the caliber of the attenuated retinal arterioles in the patients in whom the retinal lesions disappeared. This observation does not agree with Volhard's [10] widely accepted theory that "albuminuric retinitis" is due to angiospastic ischemia of the retina. Since the constricted retinal arterioles do not relax after operation, it is hard to see how fall in blood pres-

8. Allen, E. V., and MacLean, A. R.: Relief of "Hypertension" Headache with the "Head-Up" Bed, Proc. Staff Meet., Mayo Clin. **15**: 523 (Aug. 14) 1940.

9. Cobb, S.: Review of Neuropsychiatry for 1938, Arch. Int. Med. **62**: 891 (Nov.) 1938.

10. Volhard, F.: Ueber die Retinitis albuminurica, Verhandl. d. deutsch. Gesellsch. f. inn. Med. **33**: 422, 1921.

sure would favor the clearing of retinal lesions of ischemic pathogenesis. These observations would seem, rather, to indicate that the retinal lesions are due to propagation of high arterial pressure to the retinal capillaries with resultant transudation and hemorrhage. They also suggest that the same mechanisms of fall in blood pressure and redistribution of blood flow away from the cephalic parts of the body which alleviate headache also lower the pressure in the retinal capillaries and venules with consequent regression of the papilledema, exudates and hemorrhages.

EVALUATION OF SYMPATHECTOMY

None of the patients here reported on was cured. From these observations, sympathectomy is a palliative and not a curative measure.

Although sympathectomy is only a palliative measure, many patients derived sufficient benefit from the operation to make it worth while. In deciding whether sympathectomy is advisable, the possible advantages and disadvantages should be counterbalanced for the individual patient. On the basis of the benefits and untoward effects observed in this series, the present status of sympathectomy appears to be as follows:

1. Sympathectomy should rarely be advised unless the patient has first failed to respond to rigid restriction of sodium chloride and to rest.

2. Sympathectomy is indicated in patients in whom a relatively rapid downhill course seems likely because of: (a) rise in diastolic pressure from a previously lower level to 130 mm. or more in several separate examinations; (b) papilledema, retinal hemorrhages or retinal exudates; (c) intractable headache; (d) cerebral hemorrhage or hypertensive encephalopathy; (e) heart failure overcome by treatment.

3. Sympathectomy is contraindicated in patients with impairment of renal function severe enough to be documented by azotemia or pronounced diminution in concentrating ability. Sympathectomy is generally inadvisable in patients with congestive heart failure not overcome by treatment, although 1 patient with severe pulmonary engorgement due to left ventricular failure has had remarkable improvement with economic rehabilitation for the first five years since operation.

4. Sympathectomy is contraindicated in patients whose symptoms are due to arteriosclerosis of the heart, brain or extremities; aggravation of these symptoms may result from abrupt fall in blood pressure. Because of the great frequency with which the complaints of hypertensive patients past 50 years are due to associated arteriosclerosis, sympathectomy is rarely indicated at this age. None of our patients was 55 years or more.

5. Sympathectomy is not indicated in asymptomatic patients in whom the diastolic pressure is consistently below 130 mm. In such cases the chances of useful and comfortable life for five, ten and not rarely more years seem to me more than to counterbalance the risks and untoward effects of the operation. Moreover, in these observations there has been little correlation between the duration of the hypertension and the success of the operation. Asymptomatic patients can be placed on suitable restrictions and watched, and sympathectomy can be advised if the pressure rises or severe headache or retinal lesions appear.

Discovery of essential hypertension in a youthful subject is not per se an indication for operation. Most patients in whom hypertension is discovered in their teens or early twenties have more than a decade, most often probably two or more decades, of well-being before them. Moreover, there is no certainty that sympathectomy will be successful in youthful subjects. The operation was performed on an asymptomatic youth aged 17 whose hypertension was of two years' duration; the blood pressure of 175 mm. systolic and 120 mm. diastolic has changed little in the five years since.

Using these criteria, the writer recommended sympathectomy in about 4 per cent of the patients with essential hypertension seen in the past year. In view of the fact that some were referred because operation was under consideration, in general practice the proportion would probably be smaller. Helpful and even life saving though sympathectomy is to some patients, at present it fills only a small gap in the great therapeutic problem of essential hypertension.

SUMMARY

One hundred and nineteen patients with severe essential hypertension were selected for sympathectomy and followed by the same observer for an average of thirty-two months. There were 4 operative and 18 subsequent deaths. The diastolic pressure was reduced 25 per cent or more in 30 patients. Worth while symptomatic improvement occurred in 59 per cent. Headache was the symptom most often relieved. Retinopathy cleared in 12 of 17 patients. Headache and retinopathy may disappear after operation without fall in blood pressure. It is suggested that the reason why cephalic manifestations (headache, retinopathy) of hypertension are the most favorably affected is that sympathectomy results in a redistribution of the cardiac output with a smaller fraction going to the cephalic portions of the body. The results of sympathectomy offer evidence that rise in pressure in the minute vessels of the brain and retina is of great importance in the pathogenesis of hypertensive headache and retinopathy. Sympathectomy is a palliative and not a curative procedure. After a weighing of the favorable and untoward effects, it is concluded that sympathectomy is indicated in less than 4 per cent of patients with essential hypertension.

RHEUMATIC FEVER IN CHILDHOOD

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The voluminous literature that has appeared in the last few years confirms the observation made by Sir Thomas Watson in 1843 that rheumatic fever is a disease of childhood. It also suggests that the many reported cases of heart disease appearing at different periods of life have their origin in rheumatic fever of childhood—thus a pediatric problem.

Rheumatic fever is an acute or chronic systemic disease probably of infectious origin characterized by fever, joint, muscular, skin and nervous manifestations which frequently involves the heart and has a tendency to recur.

HISTORY[1]

Hippocrates was credited by Chomel with describing acute arthritis. The term rheumatism was first used by Ballonius (Baillou) (1535-1616), but his work appeared in 1642 posthumously. Sydenham gave the first satisfactory clinical description of the differential diagnosis between acute rheumatism and gout in 1676. What is known as Sydenham's chorea was described by him a few years later. Independently and about the same time, in 1789 Jenner and Pitcairn gave lectures in which

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1. Wilson, M. G.: Rheumatic Fever, New York, The Commonwealth Fund, 1940.

they demonstrated the association of rheumatism with heart disease. In 1833 Bouillaud emphasized the constant association of rheumatism and heart disease, stressing the frequent occurrence with rheumatism of both endocarditis and pericarditis. Wells first described subcutaneous nodules in 1810. Bright in 1831 recorded erythematous rashes in association with chorea and its close "affections of the pericardium." Sir Thomas Watson in 1843 "recognized rheumatic fever as essentially a disease of childhood." Cheadle, Sturges, Barlow, Lees, Garrod, Poynton, Payne, Coombs and Mantle are the names associated with this disease in the latter part of the last century and the first part of this century. MacLagan first emphasized the salicylic drug as of benefit in rheumatic fever in 1876. In 1904 Aschoff described the specific interstitial myocardial lesions usually called "Aschoff bodies."

ETIOLOGIC FACTORS

The etiology of this disease has not been determined. It is truly a research problem which a number of investigators have undertaken, but indisputable confirmatory evidence has not been presented. Jones[2] and other authors have pointed out in connection with rheumatic fever that the original focus of onset depends on the implantation of the hemolytic streptococcus A group, usually in the upper respiratory tract. There is almost conclusive evidence that the hemolytic streptococcus is a causative agent, but the mechanism remains obscure. Lichtwitz[3] expressed the opinion that rheumatic fever is a noninfectious disease and is not caused by specific micro-organisms which may be pathogenic or nonpathogenic. He directed attention to the similarity between serum sickness and a certain type of rheumatic disease which might indicate that the sensitizing antigens may also arise in response to foreign proteins that are not of microbic origin. The subject of sensitizing is brought out clearly by Coburn,[4] who stated the belief that there is an abnormal response to the hemolytic streptococcus in the rheumatic subject, implying both the genetic and the conditioning factor, and he outlined the response to the attack. Three soluble antigenic principles are produced in vitro; namely, erythrogenic toxin, fibrinolysin and streptolysin.

A virus organism as the cause of this disease is doubtful; it now appears that the weight of evidence and most authorities believe hemolytic streptococcus group A which produces an antigen that acts in a sensitizing manner is the chief cause of this disease.

CONTRIBUTORY CAUSES

Heredity.—Heredity is an important factor. Approximately 5 per cent of all children fall into the genetically susceptible group. The gene follows the mendelian recessives, which is clearly demonstrated by Wilson's[5] diagram, used by her permission and that of the publishers.

Nutrition.—An analytic study of the diet of our patients reveals that the carbohydrates are high and the proteins low. It has been demonstrated that when patients with rheumatic fever are given a nutritious diet it tends to prevent recurrences.[6] The foods suggested were eggs (particularly yolks), meat, milk and calcium.

Economic and Environmental Factors.—The majority of these cases are found in the poorer class. In all classes faulty diets may be discovered. Poor housing, improper clothing and unhygienic surroundings are important contributory factors. Exposure to sudden changes in temperature with dampness increases susceptibility to respiratory and other infections. Coburn[4] called attention to the fact that the mortality from rheumatic fever is much higher in England than in the Netherlands. He expressed the opinion that it is not the environment or the climate but dietary deficiencies which are responsible.

TABLE 1.—*Prediction Chart for Childhood Rheumatism**

Mating	Expected No. Rheumatic Children Before Occurrence of Rheumatic Child	After Occurrence of Rheumatic Child
Both parents positive	All (nearly)	All
One parent positive, the other parent's relatives as follows:		
One parent or many siblings positive	One half	One half
One sibling or many aunts and uncles positive	One third	
One aunt or uncle positive	One sixth	
Both parents negative but one grantparent of each line positive	One quarter	One quarter
Both parents negative and rheumatic fever remote or absent in relatives	Unlikely	

*Based on the interpretation of a single recessive gene.

INCIDENCE

Rheumatic fever has the highest mortality among the diseases of children. Its distribution is universal, but it is more prevalent in cold damp climates than in those that are warm and dry. This observation may be illustrated as far as the United States is concerned by a graphic chart, "Studies in Rheumatic Fever," by The Metropolitan Life Insurance Company,[7] which shows a high incidence of rheumatic fever in the New England states and certain of the Rocky Mountain states and a low incidence in the Midwestern and Southern states (fig. 1).

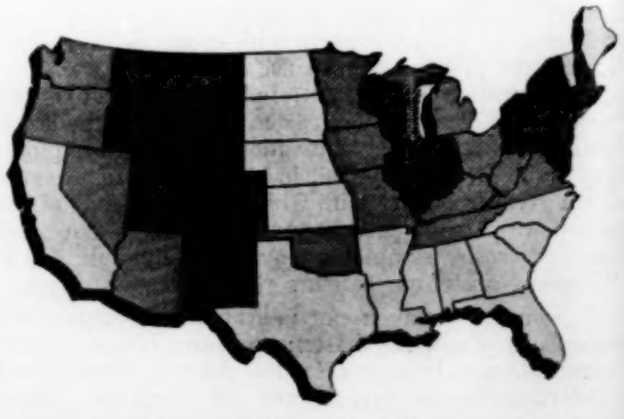

Fig. 1.—Map showing death rates from rheumatic fever for the years 1939 to 1941 among white persons aged 5 to 24 years. Solid black, very high rate (9 or more per hundred thousand); heavy diagonal bars, high (7 to 8.9 per hundred thousand); light diagonal bars, medium (5 to 6.9 per hundred thousand); white, low (under 5 per hundred thousand). A relative concentration of rheumatic fever in certain areas is evident. Rates of sickness from the disease in army camps show a less definite pattern but are generally highest in the Rocky Mountain area. (Chronic rheumatic heart disease is included.)

The work which the American Council on Rheumatic Fever of the American Heart Association, Inc., is doing deserves commendation; the results of the investigation of these organizations has stimulated physicians to greater study and more careful investigation by em-

2. Jones, T. D.: Chronically Ill Cardiac Children in Institutional and Foster Homes, Am. J. Pub. Health 31:813 (Aug.) 1941.
3. Lichtwitz, L.: Pathology and Therapy of Rheumatic Fever, New York, Grune & Stratton, Inc., 1943, chap. 2, p. 4.
4. Coburn, A. F.: Rheumatic Fever Problem, Am. J. Dis. Child. 70:339 (Nov.-Dec.) 1945.
5. Wilson,[1] p. 54.
6. Coburn, A. F., and Moore, L. V.: Nutrition as Conditioning Factor in Rheumatic State, Am. J. Dis. Child. 65:744 (May) 1943.
7. Studies in Rheumatic Fever, New York, Metropolitan Life Insurance Company, November 1944, p. 12, chart 9, no. 1.

phasizing the prevalence and seriousness of rheumatic fever. Consequently many unsuspected cases are being discovered. Some aspects of the disease are well known and clear but others are puzzling, so that it deserves careful study in the hope of finding out more about the disease. Added interest is being shown in rheumatic fever because the experience in the recent war revealed a great many cases. "Preliminary study shows the rejection rate for rheumatic fever, including history of rheumatic fever, was approximately 3 per 10,000."[8] "Also preliminary data, pending final analysis of medical records, shows that there were approximately 17,900 cases of rheumatic fever reported in the Army during the period 1942-1945 inclusive."

There are probably more than 1,000,000 cases of rheumatic fever in the United States, with at least one half of the total, or 500,000 cases, among children.[9] "In Boston and New York, about one half the cases with rheumatic heart disease who were subjected to special review had a history of rheumatic fever or chorea in childhood."[10]

A survey of school children in Dublin, Ga., revealed organic heart disease in 1.5 per cent. Rheumatic heart disease was found in 1 per cent of all school children examined, 1.26 per cent of the white children and 0.60 per cent of the Negro children. The incidence of rheumatic fever was 2 per cent, 2.10 per cent among white children and 0.60 per cent among Negro children.[11] This again shows that white children are more susceptible than Negro children.

Yueda,[12] in a ten year review of autopsies at the Charity Hospital in New Orleans, Jan. 1, 1935, to Jan. 1, 1945, discovered 167 cases of rheumatic fever, which is 1.35 per cent. These figures are practically the same as those for Northern cities. He concluded that Negroes are not more susceptible but the disease is more severe, particularly among the Negro females. In 39, or 24 per cent of these cases, the findings were incidental and there was no clinical evidence or diagnosis of rheumatic fever.

SYMPTOMS AND SIGNS

When a child presents itself with obvious cardiac or choreic manifestations the diagnosis may be considered established. It is the borderline cases which one must carefully investigate. A history of present or past manifestations and laboratory findings is essential in order to arrive at a correct diagnosis, because there is no single positive test on which one can determine a diagnosis. The recording of easy fatigue, insomnia, restlessness, anorexia, failure to gain, emotionalism, anemia and repeated epistaxis with low grade fever suggests a chronic disease, and rheumatic fever should be considered. Jones[13] in his classifications of rheumatic fever listed various manifestations which he divided into two groups:

A. Major manifestations:
   1. Carditis
   2. Arthralgia, migrating joint arthritis
   3 Chorea
   4. Subcutaneous nodules
   5. Recurrence of rheumatic fever

B. Minor manifestations:
   1. Fever.
   2. Abdominal pains
   3. Precordial pains
   4. Rashes
   5. Epistaxsis
   6. Pulmonary findings
   7. Laboratory findings

Morgan[14] described a prerheumatic stage in children presenting these symptoms: tendency to become easily fatigued, bouts of unexplained fever, listlessness, restlessness, particularly in sleep and failure to gain weight. These signs are more apt to occur during the spring and in damp weather.

Coburn[4] describes three definite phases in rheumatic fever in which he named the manifestations and the duration of each; these are: (1) invasion or onset; (2) quiescence, and (3) active rheumatic fever.

Rheumatic fever may be monocyclic, polycyclic or continuous; Griffith[15] described four clinical types of rheumatic fever: (1) acute fulminating type; (2) subacute polycyclic type; (3) subacute monocyclic type, and (4) subclinical type.

Growing pains have been considered of too little significance. Kohn and Lingg[16] in following cases in which growing and articular pains were manifested found that one third showed definite evidence of rheumatic fever within a year and that within three years 50 per cent showed other manifestations of rheumatic fever. Abdominal pain is a common symptom, also muscular pains in the arms and more frequently the legs. Repeated stumbling when running followed by pain in the legs is significant. Apfel[17] stressed abdominal and muscular pains, particularly in the hamstring, calves and shoulder group.

In an examination of 3,129 cases[16] of rheumatic fever as to the type of onset, polyarthritis was found in 1,262 or 40.3 per cent. Gibson[18] stated that in 60 to 70 per cent of patients showing polyarthritis rheumatic carditis developed. Chorea as a manifestation of rheumatic fever has been shown clearly by Jones and Bland[19] and many others.

Examination and reexamination of the heart are important, while the interpretation of the signs and sounds heard are of equal significance. The child should be stripped to the waist so that the cardiac area may be well investigated. Palpation for thrills and a maximum impulse should be made, and percussion for the size of the heart. Intrinsic and functional murmurs which are unrelated to true cardiac disease are rather common in children. Auscultation should begin at the base in order that the sounds may be timed properly. In the beginning of the disease the soft systolic murmur is heard best over the apex; it is usually transmitted to the axilla. As the disease progresses the middiastolic murmur is heard. This means the involvement of the mitral valve. As the disease progresses one must be mindful of a pericardial involvement. The child should be ex-

8. Cannon, F. A.: Personal communication to the author, April 28, 1947.
9. Taran, L. M.: Problems in Management of Rheumatic Disease in Childhood, J. Pediat. 24:62 (Jan.) 1944.
10. Rheumatic Fever in Children: Its Recognition and Management, New York, Metropolitan Life Insurance Company, p. 3.
11. Quinn, R. W.: Incidence of Rheumatic Fever and Heart Disease in School Children in Dublin, Ga., with Some Epidemiologic and Sociologic Observations, Am. Heart J. 32:135 (Aug.) 1946.
12. Yueda, I.: Rheumatic Heart Disease, New Orleans M. & S. J. 98:271 (Dec.) 1945.
13. Jones, T. D.: Diagnosis of Rheumatic Fever, J. A. M. A. 126:481 (Oct. 21) 1944.
14. Morgan, S. F.: Heart Disease in Children from the Pediatric Viewpoint, Wisconsin M. J. 44:676 (July) 1945.
15. Griffith, G. C.: Rheumatic Fever: Its Recognition and Treatment, J. A. M. A. 133:974 (April 5) 1947.
16. Kohn, A. E., and Lingg, C.: The Natural History of Rheumatic Cardiac Disease: A Statistical Study, J. A. M. A. 121:6 (Jan. 2) 1943.
17. Apfel, H.: The Rheumatic Child, Arch. Pediat. 62:201 (May) 1945.
18. Gibson, S.: Rheumatism in Chorea, in Brennemann, J.: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1936, vol. 2, chap. 19, p. 8.
19. Jones, T. D., and Bland, E. F.: Clinical Significance of Chorea as a Manifestation of Rheumatic Fever, J. A. M. A. 105:571 (Aug. 24) 1935.

amined in recumbent, upright and lateral positions and in different phases of respiration, particularly on deep inspiration, in order to rule out cardiorespiratory murmurs or functional murmurs which are not of any significance. When a persistent diastolic murmur is heard regardless of the position or the stage of respiration it invariably means valvular involvement which may be congenital acquired or both.

Gibson[20] emphasized the importance of the presystolic murmur heard over the apex in rheumatic heart disease. The systolic and diastolic murmurs may disappear while this third murmur persists.

It is sometimes necessary to have a stethogram[21] made in order to have the correct interpretation of the murmurs heard.

DIFFERENTIAL DIAGNOSIS IN RHEUMATIC FEVER

There are several diseases which may be confused with this disease; 1. In rheumatoid arthritis, the enlarged spleen and the failure to respond to salicylates are two differentiating features. 2. Septic arthritis is differentiated by aspiration of purulent fluid from the involved joint. 3. In syphilitic hydrarthrosis the involvement of the joint persists and the Wassermann reaction is positive. 4. In sickle cell anemia, the joints fail to respond to salicylates and there is sickling of the red blood cells. 5. In poliomyelitis there is a generalized anesthesia in the beginning, stiffness in the neck and some changes in the spinal fluids. 6. In lupus erythematosus exposed areas are involved, particularly the bridge of the nose; there are leukopenia, microscopic hematuria and shallow ulcers on the buccal mucous membrane. 7. In undulant fever there is specific agglutination or a positive reaction to a cutaneous test, and usually a low sedimentation rate. 8. Ova of parasites are found in stools. 9. In dengue fever, the joints do not swell and there is a poor response to salicylates.

PATHOLOGIC CHANGES

The characteristic Aschoff bodies are usually not seen after the first attack of rheumatic fever, but the mesenchymal tissue is involved. There is an increase of vascular permeability with an involvement of the connective tissue spaces in the myocardiam, with also a change in the connective tissue of the endocardiam and under the serous layers.[22] Necrosis soon follows which is a fibrinoid degeneration of the collagen fibrils; this is followed by a characteristic cellular response. The fibroblastic proliferation is apt to continue and in turn is followed by the appearance of multinucleated cells, so-called Aschoff cells. New fibrous tissue is produced and the valves are likely to be involved. Experimentally[23] bodies simulating Aschoff bodies have been produced by intravenous injection of heterologous serum proteins.

The pathologic changes[24] resolves themselves into chronic inflammatory lesions of the collagen connective tissues involving most often the heart and also the joints, subcutaneous tissues, brain and other organs.

20. Gibson, S.: The Clinical Significance of Heart Murmurs in Children, M. Clin. North America 30:35 (Jan.) 1946.
21. Halpern, B. C., and Faber, H. K.: The Cardiopathy of Sickle Cell Anemia and Its Differentiation from Rheumatic Carditis, J. Pediat. 30:289 (March) 1947.
22. Baehr, G., and Pollack, A.: Diffuse Vascular Diseases: I., Mod. Conc. Cardiovasc. Dis., December 1946, vol. 15.
23. Elghammer, H. W.: Symposium on Pediatrics: Rheumatic Fever, Diagnostic Criteria and Rheumatic Heart Disease, M. Clin. North America 30:25 (Jan.) 1946.
24. Robinson, J. J., and Currens, J. H.: Preliminary Observations on Some Children with Rheumatic Heart Disease Transported to a Subtropical Climate, J. Pediat. 28:426 (April) 1946.

PROGNOSIS

The prognosis will depend on ability to have provided suitable environmental surroundings, a proper diet and probably a change of climate. The early medication by large doses of salicylates and rest in bed. The outlook even under the most favorable circumstances depends on the seriousness of the attack with particular reference to cardiac damage, the grade of chorea and the number of reinfections. May G. Wilson[1] in her review of 673 children with rheumatic fever found that the average duration of life after cardiac decompensation was only 2.8 years, and that after a congestive heart failure chances of surviving beyond the second decade are less than 1 in 3.

TREATMENT

Prompt recognition and early treatment are of the greatest value. There should be careful history taking, culturing of inflamed throats, observation for manifestations of chorea and appropriate treatment in the incipience of the attack. It is probable that a possible disabling illness could be prevented.

Patients with active disease must be given complete bed rest until all signs of decompensation have cleared.

TABLE 2.—*Summary of Management of Patient with Rheumatic Fever*

Examination	Laboratory examinations
History	R.B.C. and W.B.C. differential hgb.
Temperature, pulse and respiration	Sedimentation rates
Weight	Urinalysis; exam. of stool
General appearance and general physical exam.	Search for sickle cells in all Negro patients
Examination of heart with patient in recumbent and sitting positions	Electrocardiogram
	Roentgenogram in A. P., lateral and right oblique
	Vaginal smear
	Agglutination series
	Swab (probably should have routine throat cultures)
Diagnosis	
Recommendations: hospitalization; foster homes; convalescent homes, or to be sent home	
Treatment: rest; exercise; salicylates; sulfadiazine; vitamins and diet	
Date of return visit	

The temperature should have remained normal for sufficient periods and other symptoms abated before exercise is allowed, and the sedimentation rate should be within normal limits. Perhaps the sedimentation rate is the best indicator now available for determining retardation or activity of the disease. Convalescent serums are of doubtful value. Repeated small transfusions have proved useful. Suitable environment which permits ample sunshine is essential.

Diet has not been sufficiently emphasized, as most patients show deficiencies in essential elements; even total calories are often insufficient. Foods procured from natural sources having vitamins, proteins and mineral elements in such proportions as to meet the requirements of nutrition should be given. The element calcium, which is deemed of great importance, should be derived from milk and the green leafy vegetables, and in order that the proteins contain essential amino acids that are not synthesized in the body the source should be meats, whole grain cereals and milk. Vitamin C is necessary to normal nutrition and is best obtained from citrus fruits. If an idiosyncrasy exists to one or more citrus fruits I suggest ascorbic acid.

The climatic change is of questionable value unless the patient is going to remain in the climate that has proved of benefit, because return to a colder climate may lead to recurrence. If the patient is to be returned to a different climate, preventive therapy should be instituted, provided the patient does not become drug (sulfonamide) sensitive.

The exercise of rheumatic patients must be limited and should be under competent medical supervision. At any signs of an interruption in convalescence such as dyspnea, fever or rapid pulse, activity must be stopped and a functional test applied.

Chemotherapy.—Salicylates in large doses are indicated.[25] Taran[26] has shown that excellent results are obtained with the drug by mouth; he expressed the belief that the intravenous route is hazardous in children. The blood level should be 35 mg. per cubic centimeter, which can be derived by use of 1½ grains (0.1 Gm.) per pound (0.5 Kg.) of body weight. The benefit of sodium bicarbonate with the salicylates is debatable, and I think that aluminum hydroxide might be substituted for the sodium bicarbonate. Recently it has been suggested that the enteric salicylates produce a toxic effect, but I have not had this experience.

Penicillin has not given good results. Streptomycin has not been used in cases of rheumatic fever so far as I am aware. The sulfonamide drugs are contraindicated in the cases of active disease. Specific therapy such as the application of heat locally is good, but the use of artificial heat in the electric cabinet is of doubtful value.

Digitalis often saves a life in cases of decompensation. When it is used a sufficient amount should be given to digitalize the heart promptly. Sedation in the form of barbiturates or codein is often necessary. Oxygen will frequently tide the patient over from an extreme condition to a less severe one until the heart can pump sufficient oxygen to ventilate the system.

Paracentesis in pericardial effusions may be necessary to relieve cardiac embarrassment. Diuretics are not often employed but when indicated may be helpful.

Gratifying results in reducing the number of recurrent attacks by the use of sulfonamide drugs have been reported.[27] In the administration of the sulfonamide drugs toxic effects such as leukopenia, rashes, nausea and vomiting, icterus and agranulocytosis must be watched for.

INACTIVE RHEUMATIC FEVER

The preventive feature is an essential. This can be largely augmented by three methods: 1. Sulfonamide drugs should be administered in sufficient doses to prevent recurrent infections of the upper respiratory tract of the hemolytic streptococcus A group. Frequently daily doses of 0.5 to 1 Gm. will suffice. Blood sulfonamide levels around 1.0 to 3 mg. per cubic centimeter will often be enough, but this may vary with the individual patient. It is best to continue administration of sulfonamide drugs throughout the year, as exacerbations may occur in the summer, as was shown by Wolf, Rauh and Lyon.[28] The toxic effects have almost been nil, but a patient receiving this drug should have white blood cell counts and determinations of hemoglobin and of sulfonamide levels in the blood every two to four weeks. Urinalysis should be done at frequent intervals. Periodic administration of the drug may cause patients to become sensitive. 2. A suitable diet should be instituted as previously recommended, with sunshine and environmental improvement. 3. The psychosomatic condition must be cared for, as depressions in these children occasionally develop and deter their progress considerably.

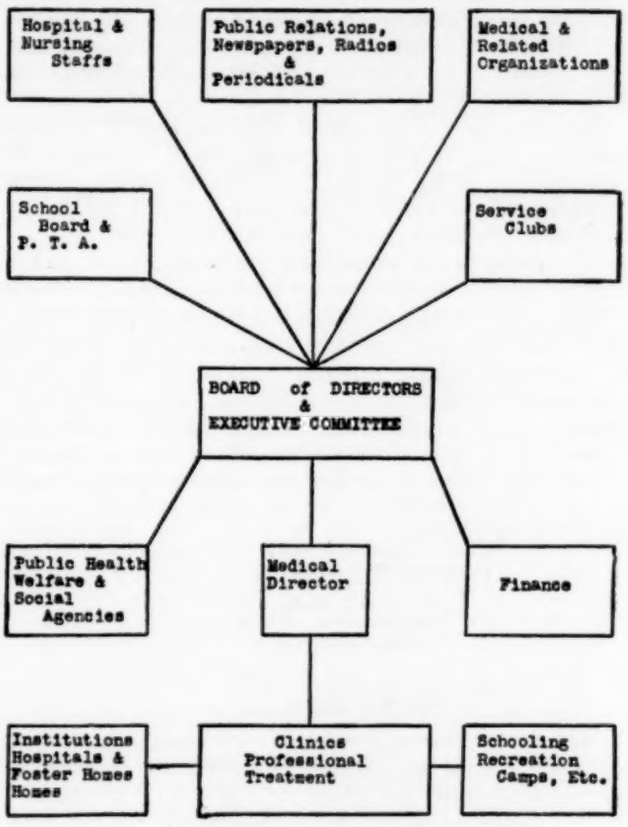
Hospital & Nursing Staffs
Public Relations, Newspapers, Radios & Periodicals
Medical & Related Organizations
School Board & P. T. A.
Service Clubs
BOARD of DIRECTORS & EXECUTIVE COMMITTEE
Public Health Welfare & Social Agencies
Medical Director
Finance
Institutions Hospitals & Foster Homes Homes
Clinics Professional Treatment
Schooling Recreation Camps, Etc.

Fig. 2.—Organization plan for a rheumatic fever program.

Studies[1] made of the relation of tonsillectomy to rheumatic fever convince me that the removal of tonsils gives little assurance of preventing either an initial attack or recurrence. When the operation is considered repeated throat cultures should be made, a urinalysis made and a satisfactory nutritional state established. The operation should not be performed when the disease is active. Should the precautionary measures not be observed operation may result in serious harm.

If the tonsils are diseased and apparently harbor the focus of infection they may be removed at an appropriate time. Small quantities of sulfonamide drug should be given. Kaiser[29] reported that the tonsils act as a storehouse for vitamin C, and they function as a filtering plant in preventing systemic infections.

The use of specific hemolytic streptococcus, mixed or typhoid vaccines has not produced encouraging results, nor have serums or blood from persons who have recovered from rheumatism prevented recurrence.

DETECTION OF CASES

Rheumatic fever should be a reportable disease; until such time it is going to be difficult to distinguish the doubtful from the actual cases of rheumatism.

25. Coburn, A. F.: Salicylate Therapy in Rheumatic Fever, Bull. Johns Hopkins Hosp. 73:435 (Dec.) 1943.
26. Taran, L. M., and Jacobs, M. H.: Salicylate Therapy in Rheumatic Fever in Children, J. Pediat. 27:59 (July) 1945.
27. Coburn, A. F., and Moore, L. V.: Prophylactic Use of Sulfanilamide in Rheumatic Subjects, M. Clin. North America 24:633 (May) 1940. Stowell, D.D., and Button, W. H.: Observations on Prophylactic Use of Sulfanilamide on Rheumatic Patients, with Report of One Death, J. A. M. A. 117:2164 (Dec. 20) 1941. Hansen, A. E.; Platou, R. V., and Dwan, P. F.: Prolonged Use of Sulfanilamide Compound in Prevention of Rheumatic Recrudescences in Children, Am. J. Dis. Child. 64:963 (Dec.) 1942. Kuttner, A. G., and Reyersbach, G.: Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide, J. Clin. Investigation 22:77 (Jan.) 1943. Chandler, C. A., and Taussig, H. B.: Sulfanilamide as Prophylactic Agent in Rheumatic Fever, Bull. Johns Hopkins Hosp. 72:42 (Jan.) 1943. Dodge, K. G.; Baldwin, J. S., and Weber, M. W.: Prophylactic Use of Sulfanilamide in Children with Inactive Rheumatic Fever, J. Pediat. 24:483 (May) 1944.
28. Wolf, R. E.; Rauh, L. W., and Lyon, R. A.: Prevention of Rheumatic Recurrences in Children in the Use of Sulfathiazole and Sulfadiazine, J. Pediat. 27:516 (Dec.) 1945
29. Kaiser, A. B.: Unpublished data; personal communication to the author, May 20, 1947.

When there is a confirmed diagnosis of rheumatic fever made in a child it is time to investigate the parents and other siblings. This method of examining the whole family is usually called screening, a difficult task. It means careful medical insight and requires much time and tact. Physicians must profit by the setup of the antituberculosis organizations, as they are known to have accomplished great good. Their results have shown a general decline in mortality since the first world war.

Examination of all school children should be compulsory. The voluntary examination of children by Jackson[30] and his group in Iowa disclosed several cases which otherwise might have escaped notice until it was too late to give the child much relief.

The problem of controlling rheumatic fever is one that belongs to the entire community (fig. 2). It is a collective and cooperative one. Armstrong and Wheatley[31] have offered excellent suggestions and plans for the approach with a concrete example as to the management of such a scheme or outline. It is a local community affair which should be popularized under well trained professional leadership. It is the cooperation of numerous persons and organizations acting through an executive committee, from which satisfactory results will be obtained.

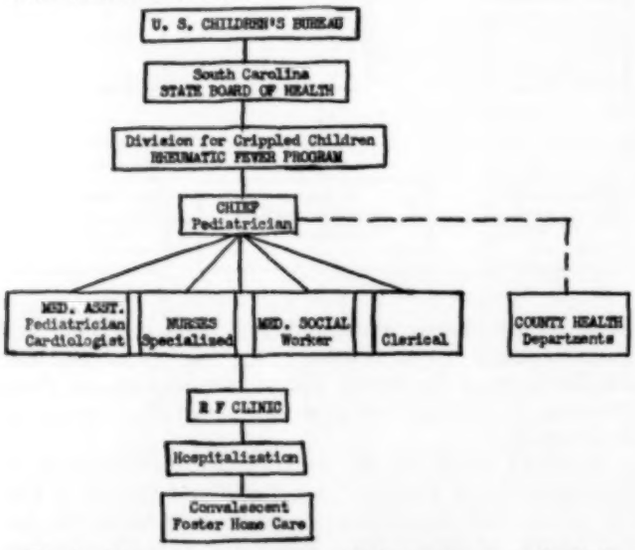

Fig. 3.—Organization of the rheumatic fever program in South Carolina, May 1947.

NOTES ON CASES

In a series of 50 patients, of whom 32, or 64 per cent, were white and 18, or 36 per cent, were Negro, the severe cardiac damage was 30 per cent more common among the Negro patients and the decompensation was twice as great.

My associates and I now have under observation 4 patients with active chorea, 3 white girls aged 4 to 12 years and 1 Negro girl aged 10 years. Two of the white girls and the Negro girl are having their second attack. No cardiac or valvular disease has been observed in the white girls, while the Negro girl shows definite disease of the mitral valves.

The results of the cardiograms have not been entirely satisfactory, as there have been only 4 patients among the 15 who have had definite rheumatic cardiitis who show prolonged intervals and irregularities. Our cardiologist examines each patient and thinks that we should use three chest leads instead of one to get a true picture; however, it demonstrates to me that though there is valvular involvement the myocardium and conductive mechanism have not been affected; that signifies that attacks in this climate are less severe.

The organization of our rheumatic fever clinic has been too recent to give any statistics, but it is manifest that cases of rheumatic fever exist in South Carolina, which was demonstrated by Beach and Ravenel[32] in 1944. I reported 30 cases in the same year.[33]

SUMMARY

As a result of improved diagnostic information and widespread interest rheumatic fever has been found to be more prevalent than formerly suspected. It has been shown that heredity is an important factor. Great emphasis is placed on nutrition. In no other disease is the satisfaction of normal nutritional requirements more essential as a means of restoring health. Environmental and hygienic surroundings occupy an important position in the restoration of health.

The salicylates should be administered within the limits of tolerance in the cases of active rheumatism. The measures suggested for disabling manifestations are of primary importance. It is suggested that the administration of sodium bicarbonate with the salicylates be abandoned and that aluminum hydroxide be substituted. The sulfonamide compounds have a definite field of usefulness in the prevention of recurrent rheumatic fever.

My observation is that rheumatic fever is not so common among Negroes as among whites but more severe.

ABSTRACT OF DISCUSSION

DR. IRA GORE, Washington, D. C.: My experience has been limited to work in the etiology and pathology of this condition with respect to which Swift's views, regarding the importance of streptococcic infections and hypersensitivity to them, have been widely accepted. Recent bacteriologic work, though, has shown that steptococci are not a homogeneous species. There are eleven groups, of which group A is the one of etiologic significance. Within group A there are forty subtypes, much as there are subtypes among pneumococci. During the recent war, a commission studying hemolytic streptococcus diseases reaffirmed the relation of group A streptococci to the causation of rheumatic fever. They indicated that the disease never occurred in the absence of a previous infection by this organism. Several types were found capable of producing the rheumatic fever state with no one type predominating. The importance of reinfection by other types of group A organisms was stressed. Moreover, such a reinfection, provable by laboratory means, could be rather insidious, without clinical manifestations. In a significant number of their cases, abnormal electrocardiograms and elevated sedimentation rates were found during the interval preceding the onset of rheumatic fever; there was no true latent period. In another group of 185 carefully studied cases of streptococcus A infections of the respiratory tract, 2 exhibited similar abnormalities of the electrocardiogram and sedimentation rate, but these manifestations were not accompanied by arthritis. The commission argued the essential identity of the two groups, the one group with arthritis and the other group without arthritis. But here caution and further investigation are indicated. Distinct anatomic differences are present between the cardiac changes which are frequent in scarlet fever and those found in rheumatic fever, and yet these cases of streptococcus A infection, too, are associated with abnormalities in the electrocardiogram and in the sedimentation rate. Whether they provide the anatomic background on which rheumatic fever develops, one cannot say, but certainly such

30. Jackson, R. L.: Heart Disease in Children in a Rural Iowa County, Particularly in Relation to Rheumatic Fever, J. Pediat. 29:647 (Nov.) 1946.

31. Armstrong, D. B., and Wheatley, G. M.: Community Organization for the Control of Rheumatic Fever, New York State J. Med. 45:169 (Jan. 15) 1945.

32. Beach, M. W., and Ravenel, R. O.: Rheumatic Fever, J. South Carolina M. A. 40:199 (Oct.) 1944.

33. Weston, W., Jr.: Rheumatic Fever, South, M. J. 38:189 (March) 1945.

changes are much more frequent than rheumatic fever following scarlet fever. Furthermore, the anatomic changes in 35 fatal cases of myocarditis following acute tonsillitis and nasopharyngitis are quite at variance with those of rheumatic fever. Though these cases lack the careful bacteriologic studies which would identify them unequivocably with those studied by the streptococcus commission, on a frequency basis alone there can be little doubt that many of them should be included.

Dr. Stanley Gibson, Chicago: Dr. Weston called attention to the major and minor phenomena of rheumatic fever as outlined by Dr. Duckett-Jones, and I am sure we all agree with him. However, it is not always easy to be sure whether we have even one of those major phenomena. Take, first of all, polyarthritis. In the typical case of rheumatic polyarthritis, in which several joints are involved, with redness and tenderness of the joints, fever and a prompt response to salicylates, one has little doubt of the diagnosis of rheumatic polyarthritis, and I think the diagnosis can be made on that one manifestation alone. However, there are many cases that are less clear; for example, the child who has some nondescript pains, the mother being not quite sure whether they are in the joints or in the muscles, oftentimes only in the legs rather than in the arms and the legs. Those cases require careful study, and one should be careful about making a diagnosis of rheumatic polyarthritis on such a basis. In proportion as the pains are in the muscles rather than the joints, and when they involve only the legs rather than the arms and legs, I think one should be still more suspicious of a diagnosis of rheumatic fever. Ordinarily, there is little doubt about the diagnosis of chorea, though one sees many jittery children that are suspected of having chorea and sometimes are given this diagnosis on insufficient grounds. I like to think of Sydenham's chorea as disease which has a definite beginning, a continuance of weeks or months and a definite ending, so that at the end of the time the child is again well so far as the nervous system is concerned. I would also like to know that along with the incoordination of movement the child also has an emotional instability which is an integral part of chorea. Rheumatic nodules, another major manifestation of rheumatic fever, seldom help diagnosis, because the child who has nodules has a chronic and usually severe rheumatic infection, and the diagnosis does not depend ordinarily on the finding of a rheumatic nodule. They are of prognostic rather than of diagnostic importance. In regard to the heart, disease in which is the fourth major manifestation of rheumatic fever, I think again there are pitfalls. Too often, rheumatic heart disease is diagnosed on the presence of a murmur. If one keeps in mind the pathologic changes, it is only certain sorts of murmurs that are indicative of rheumatic heart disease. The two valves most severely and commonly involved are the mitral valve and the aortic valve. The mitral valve gives the systolic apex in the beginning; later a middiastolic and perhaps later a presystolic murmur. Those murmurs are at the apex, and that should be emphasized. As regards involvement of the aortic valve, the diastolic murmur of aortic insufficiency is distinctive once it is well heard, and unless one can hear these typical murmurs, I do not believe one should diagnose rheumatic heart disease, at least on the basis of auscultation.

Dr. Rachel Ash, Philadelphia: Dr. Weston emphasized the seriousness of rheumatic infection in childhood. I should like to illustrate this point by showing what happened to a group of 536 rheumatic children in Philadelphia. Ten years after onset of the disease, 25 per cent have already died of rheumatic infection. Moreover, the majority of persons presenting no functional incapacity are those who showed no clinical evidence of heart disease at the time of the initial attack. However, the incidence of carditis and of deaths was greater among those children taken ill during the period 1922 to 1926 than during the period 1927 to 1931, and least of all among those taken ill between 1932 and 1936. The decrease in carditis has not been due to any variation in the method of using salicylates. Throughout this period, it has been the custom of my associates and me to administer large doses of salicylates at the beginning of the disease, but not to continue their use in the absence of fever or articular pains. About ten years ago, we did try long-continued use of salicylates in about 10 children on our convalescent ward, and in that group, as in repeated isolated instances throughout the years, we have witnessed the development of carditis and of recurrences while large doses of salicylates were being administered. Whereas in the early part of this period, the majority of the children were returned home shortly after the disappearance of acute symptoms, these children are now kept in the hospital for an average period of three months or longer. Whether the lessening of severity of disease during this period is partly due to the favorable influence of prolonged bed rest at the onset of the infection or is entirely due to a spontaneous change in the character of the disease can be subject to speculation only, but I think that one should give prolonged bed rest the benefit of the doubt and not be tempted to try the recently instituted army treatment of early ambulation. The problem of controlling rheumatic fever is definitely one that belongs to the entire community. In establishing a community program, however, the education of the physician and the establishment of provisions for the care of the rheumatic child should precede publicity campaigns directed to the lay public. Such publicity campaigns do harm when they present a description of symptoms, often minor and not specifically rheumatic, which arouse neurotic fears. Because of publicity campaigns which have emphasized the most serious aspects of rheumatic infection, the diagnosis of this disease carries an emotional connotation which produces a state of panic in the minds of parents. It should not be made lightly on the basis of inadequate evidence.

Dr. Mark P. Schultz, Bethesda, Md.: Insufficient attention is, perhaps, directed to the importance of growing pains. The differentiation of pains, growing pains, as they are called, into rheumatic and nonrheumatic varieties seems most important, and it seems to me that there are some criteria which may be of help; namely, the increased severity of such pains when they are of nonrheumatic origin. It has often been observed that pains in the extremities which have later proved not to be rheumatic are severe enough to cause children to cry, whereas actual pain of such severity on a rheumatic basis is rare. Also, the rheumatic pains are more apt to occur during the day or during periods of physical activity, whereas most of those of nonrheumatic origin are more in evidence when the patient is at rest. The rheumatic pains are also more apt to be articular or juxta-articular rather than involving muscular structures. Another point might be mentioned. We physicians take an extremely optimistic view of the possibility that the agents which we use in rheumatic fever are actually curative. This should particularly be borne in mind with respect to the salicylates. When the antipyretics were introduced, we were most optimistic about their possible curative effects in rheumatic infection, but during the years, however, despite the use of antipyretics, including sodium salicylate in heroic doses, the conclusion was rather universally accepted that such drugs were purely symptomatic in their effect in rheumatic fever. The introduction, about 1935, of the administration of salicylates by the intravenous route has raised this question again. I feel, on the basis of my own observations, that there is no reason to alter the conclusion reached years ago, that their effect is essentially that of affording relief of symptoms. The data which have been cited as indicating a contrary conclusion were in large part collected from military personnel of an age not particularly susceptible to the progress of cardiac lesions. Dr. Ash mentioned the contribution of Drs. Robertson and Schmidt, who tried the experiment of not restricting physical activity in rheumatic patients. They found that patients admitted with rheumatic fever, when permitted complete physical activity at their own volition from the time of their admission until their discharge except during the periods of cardiac decompensation, recovered more promptly on the whole than those whose activities were curtailed. They pointed out that strict avoidance of restriction of activity eliminates the establishment of cardiac neuroses which are not to be eliminated in children when so much attention is paid to restriction of their activities. I think this raises a serious question, whether in the past we have been too extreme in the restriction of activity of rheumatic children.

Dr. William Weston Jr., Columbia, S. C.: I tried to get some data from reports in the occupied territories, and Dr. Paul White, who is permanent head of investigation in Czechoslovakia, wrote me a letter that he did not think that the incidence of rheumatic fever or carditis had changed much, but there were a great many cases in camps. The psychiatric condition which develops, which Dr. Schultz has just mentioned, is important, and when there is any doubt in the diagnosis of rheumatic fever, it behooves pediatricians to call an internist who is trained in cardiology to substantiate it. I did not mention the treatment in regard to penicillin but I noticed a good many—Dr. Keefer men-

tioned it this morning at the panel and a number of cardiologists showed it in their displays—stated, particularly Dr. Duckett-Jones, that they were using penicillin in the cases of acute infections of the throat and also as a preventive measure in the recurrence of rheumatic fever.

STREPTOMYCIN IN TUBERCULOSIS OF BONE AND JOINT

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Streptomycin is an antibiotic substance discovered by Schatz, Bugie and Waksman, in their search for an antibacterial agent effective against gram-negative bacilli. It was first reported by them in January 1944.[1] Feldman and Hinshaw [2] proved by extensive experiments on animals that the drug exerts a profound inhibitory and healing action on well established experimental tuberculosis in the highly susceptible guinea pig.

The drug was first used in the treatment of clinical tuberculosis in the fall of 1944 by Hinshaw and Feldman [3] at Rochester, Minn. A little later its use was begun at Mineral Springs Sanatorium, Cannon Falls, Minn.

These early clinical investigations indicated that streptomycin had a favorable effect on certain forms of pulmonary tuberculosis in human beings. Further clinical studies [4] showed it to be the treatment of choice in such forms of the disease as miliary tuberculosis, tuberculous meningitis, ulcerative tracheobronchial tuberculosis, tuberculous laryngitis, draining cutaneous sinuses and tuberculous enteritis.

It is the purpose of this paper to report our experience with the use of streptomycin in the treatment of tuberculosis of the bones and joints. Brock [5] recently reported favorable response to streptomycin of sixty draining tuberculous sinuses in 12 patients.

TOXIC MANIFESTATIONS

Streptomycin, like other useful drugs, has certain toxic qualities.[6] Vestibular disturbance is noted fairly frequently, particularly with doses of 2 Gm. or more per day, continued for long periods. Partial or complete compensation occurs often in such cases, especially in younger persons. Deafness occurs but rarely and only in cases in which large doses are employed. Serious renal damage rarely occurs in patients whose renal function is normal when treatment is started. So-called sensitization phenomena occur occasionally with chills, fever, cutaneous rash, nausea and vomiting. In such cases the patient can usually be desensitized with small daily doses of 50 to 100 mg., the amount gradually being increased until the desired daily dose is reached.

In our experience these toxic manifestations are eliminated or greatly reduced by using doses of 1 Gm. daily. The possible toxic reactions should be kept in mind when one is considering the use of streptomycin, and should be compared with the hazards of the disease under treatment.

DOSAGE

Further clinical investigation with streptomycin is necessary to establish the optimal daily dose, frequency of administration and duration of treatment in tuberculosis of bone and joint. Our present impression is that 1 Gm. daily in divided doses given intramuscularly every eight to twelve hours for ninety to one hundred and twenty days may be sufficient in the majority of cases in adults of average weight. Some of our most favorable results thus far have been obtained with these dosage schedules.

STREPTOMYCIN RESISTANCE

Streptomycin-resistant strains of the tubercle bacillus are often found to have replaced the sensitive strains during the third and fourth months of treatment. This phenomenon is still incompletely understood. However, when sensitive organisms have been entirely replaced by resistant strains, further treatment with the drug is useless. This, of course, can be ascertained only in those cases in which organisms can be recovered, as from draining sinuses or sputum.

ANALYSIS OF CLINICAL RECORDS

Sixteen patients with tuberculosis of bones or joints were treated at the Mayo Clinic or at Mineral Springs Sanatorium (13 at the clinic and 3 at Mineral Springs Sanatorium). In all cases except 2 the infection was "proved" tuberculous by histopathologic examination, by culture or by inoculation of guinea pigs. In the 2 cases in which tuberculosis was not proved a positive smear for acid-fast bacilli was obtained from chronic draining sinuses of the back in Pott's disease. It can be argued that some of the cases in which tuberculosis was "proved" were cases of presumptive tuberculosis because the organism itself was not cultured.

Nineteen joints were involved by tuberculosis: four knees (two with synovial tuberculosis), four spinal columns, three ankles (two with synovial tuberculosis), three wrists, two shoulders, one elbow, one ilium and one sternoclavicular joint. Three patients had involvement of multiple joints. One of these had tuberculosis of an elbow and an ankle; another had tuberculous synovitis of an ankle and a sternoclavicular joint and tuberculous empyema with draining sinuses, and the third patient had involvement of both shoulders with multiple draining sinuses. These last 2 patients had active pulmonary tuberculosis. Two of the remaining 13 patients with involvement of a single joint had active pulmonary tuberculosis. Nine patients were female and 7 were male. The youngest patient was 6 years old and the oldest was 68.

The duration of treatment with streptomycin varied between sixty-six days and one hundred and ninety days, with an average duration of one hundred and twelve days. The average total dose of streptomycin was 134 Gm. The daily intramuscular dose of streptomycin varied from 0.75 Gm. to 2 Gm. Patients treated in the early days of streptomycin therapy (1944-1945) usually received the divided daily dose of streptomycin in 2 to 6 cc. of isotonic solution of sodium chloride every four

From the Section on Orthopedic Surgery, Mayo Clinic (Drs. Bickel and Young); Director, Mineral Springs Sanatorium (Dr. Pfuetze) and Fellow in Orthopedic Surgery, Mayo Foundation (Dr. Norley).

1. Schatz, A.; Bugie, E., and Waksman, S. A.: Streptomycin, a Substance Exhibiting Antibiotic Activity Against Gram-Positive and Gram-Negative Bacteria, Proc. Soc. Exper. Biol. & Med. **55**: 66-69 (Jan.) 1944.
2. Feldman, W. H., and Hinshaw, H. C.: Streptothricin in Experimental Tuberculosis, Am. Rev. Tuberc. **52**: 299-303 (Oct.) 1945.
3. Hinshaw, H. C., and Feldman, W. H.: Streptomycin in Treatment of Clinical Tuberculosis: A Preliminary Report, Proc. Staff Meet., Mayo Clin. **20**: 313-318 (Sept. 5) 1945.
4. Hinshaw, H. C.; Feldman, W. H., and Pfuetze, K. H.: Treatment of Tuberculosis with Streptomycin, J. A. M. A. **132**: 778-782 (Nov. 30) 1946.
5. Brock, B. L.: Streptomycin in the Treatment of Draining Tuberculous Sinuses, J. A. M. A. **135**: 147-149 (Sept. 20) 1947.
6. Hinshaw, Feldman and Pfuetze,[4] Farrington, R. F., Hull-Smith, H.; Bunn, P. A., and McDermott, W.: Streptomycin Toxicity, J. A. M. A. **134**: 679-688 (June 21) 1947.

hours. Those treated within the past year usually received half of the daily dose of streptomycin in 5 cc. of solution of sodium chloride every twelve hours. New preparations were nonirritating on injection.

Mild to moderate toxic symptoms from streptomycin were found in 9 of the 16 patients. In only 1 patient (case 8) were symptoms severe enough to warrant discontinuation of the drug. After this patient had received 2 Gm. a day for seven days urticaria developed on the legs and arms with chills, a temperature of 102 F., edema of the face, nausea and vomiting. Administration of streptomycin was stopped. Six weeks later desensitization doses of streptomycin were given: 0.1 Gm. of streptomycin every four hours intramuscularly, increased 0.1 Gm. each day until a daily dose of 1 Gm. was reached. After this procedure 2 Gm. daily in divided doses every four hours intramuscularly were continued for one hundred and sixty-six days without recurrence of toxic symptoms.

Mild toxic symptoms in 8 patients consisted of slight subjective dizziness and objective staggering in 6, tinnitus in 1 and rash in 1. This generalized rash developed seven days after administration of 2 Gm. of streptomycin daily had been begun. The rash subsided under "benadryl" (diphenhydramine hydrochloride) therapy within six days, although administration of streptomycin was continued. Subjective dizziness and objective staggering, although mild, persisted in 3 patients for eighteen months after administration of streptomycin had been stopped. This time interval represents continuation of toxic symptoms to the date of writing. Further observation will be needed to determine the duration and degree of these toxic symptoms. Deafness was not encountered in any of the 16 patients.

The results of laboratory studies, with the exception of the sedimentation rate, were uninfluenced by streptomycin therapy. The sedimentation rate paralleled the clinical and roentgenographic course of the involved joint. Repeated laboratory studies on all patients included urinalysis, hemoglobin, erythrocyte and leukocyte counts, differential blood smear, sedimentation rate, serologic studies for syphilis, Mantoux test and roentgenograms of the thorax and of the involved joints. Several patients had repeated calcium, phosphorus and urea determinations. None were influenced by streptomycin. The Mantoux reaction was strongly positive—2 plus to 4 plus—in all 16 patients.

The time since administration of streptomycin had been stopped was, when this paper was written, in 3 cases, eighteen months; in 1 case, one year; in 2 cases, eight months, and in 6 of the remaining cases seven months, six months, five months, four months, three months and two months, respectively. In 4 cases either the patients were under treatment or administration of streptomycin had been discontinued for less than one month. In addition to streptomycin therapy, other forms of treatment were carried out whenever indicated. These consisted of rest in bed, immobilization by casts, splints or braces and in three joints arthrodesis.

Tuberculous sinuses were present in 4 patients. The first patient (case 10) had chronic draining sinuses of the thorax from tuberculous empyema and a bronchopleurocutaneous fistula. Two performances of thoracoplasty, two years before administration of streptomycin was started, had not caused the sinuses or the bronchopleurocutaneous fistula to close. Both closed after a second course of adequate doses of streptomycin. The first course of streptomycin was inadequate both as to dose and as to duration, because only a scant quantity of the drug was available at that time. The second course of streptomycin was by nebulization combined with penicillin for a bronchopleurocutaneous fistula which closed within one month. This patient also had a draining sinus of the right sternoclavicular joint and tenosynovitis of the lateral aspect of her right ankle, both of which had been present for two years. The sternoclavicular sinus stopped draining within two and a half months. The ankle became asymptomatic within the same period. The patient has remained entirely well for eighteen months since administration of streptomycin was stopped.

The second patient (case 15) had draining sinuses of both shoulders of several years' duration and far-advanced bilateral pulmonary tuberculosis. Both sinuses of the shoulders stopped draining within one month after administration of streptomycin had been started, and they have remained closed for five months to the time of writing. However, sternal and scapular abscesses developed in this case two and four months respectively after administration of streptomycin had been stopped.

Patient 7 had draining sinuses of the thoracic and lumbar segments of the spinal column of eleven years' duration following thoracotomy for empyema which turned out to be a paravertebral abscess from tuberculosis of the thoracolumbar portion of the spinal column. Seventeen days after streptomycin therapy had been started the sinuses closed; they have remained closed for three months. Spinal fusion was done one month after administration of streptomycin had been stopped, and the healing of the incision and convalescence have been uneventful.

Patient 8 had draining tuberculous sinuses of the right inguinal region of three and a half years' duration; these were due to a psoas abscess which pointed there from tuberculosis of the lower thoracic portion of the spinal column. The sinuses healed within three months under streptomycin therapy, and spinal fusion was done. Convalescence has been uneventful with a follow-up of five months.

In case 12 a sinus of the wrist developed two days after administration of streptomycin had been stopped. It continued to drain for several months and then stopped. There has been no drainage for fifteen months.

In case 11 a draining sinus of the ankle developed after biopsy of tuberculous tenosynovitis. The sinus drained for four months. This patient is still under treatment and is decidedly improved.

In case 16 a sinus developed in the right inguinal region after biopsy for a lesion of the right ilium and fourth lumbar interspace. When an incision was made over Poupart's ligament, a considerable amount of thick pus welled out of the incision. This was cultured and guinea pigs were inoculated. Tuberculosis was found. Administration of streptomycin has been continued to the time of writing. The drainage, which for several weeks was profuse enough to require dressings three to four times daily, has now diminished to a drop or two in twenty-four to forty-eight hours. The patient has been working for the past two months and is receiving 0.5 Gm. of streptomycin intramuscularly twice daily every twelve hours as an outpatient.

REPORT OF CASES

CASE 1.—A white girl aged 8 years had synovial tuberculosis of the left knee (fig. 1), which was demonstrated by histologic examination of the tissue on Aug. 25, 1944. There was no roentgenographic evidence of involvement of bone. Roentgenograms of the thorax revealed only calcified hilar nodes. At this time the girl had a two year history of swelling, soreness and limited motion of the left knee. The left leg was placed in

a cast and the use of crutches was begun. The use of cast and crutches was continued for one year. This patient also had 6 Gm. daily of "promizole" (4,2′-diaminophenyl-5′-thiazolylsulfone) for the first eight months of this year. No benefit was detectable when she was reexamined. The sedimentation rate, which had been 30 mm. per hour (Westergren method) at the time of biopsy, was 45 mm. per hour one year later. At this time streptomycin treatment was begun. The patient received 0.5 to 1 Gm. a day by intramuscular injection in divided doses every four hours. This dosage was continued for

Fig. 1.—(*a*) Swollen, boggy-appearing left knee one year after biopsy and after one year in a cast without weight bearing. (*b*) Three months after cessation of streptomycin therapy. Complete subsidence of soreness and swelling and a return of a full range of motion. (*c*) Six months after cessation of streptomycin therapy. Continued normal appearance and function of left knee. (Reproduced from motion picture film.)

eighty-four days until a total dose of 58 Gm. of streptomycin had been given (fig. 1*a*). Within two and a half months the sedimentation rate dropped to 7 mm. per hour. When the patient was last examined, eighteen months after streptomycin therapy had been stopped, the sedimentation rate was 4 mm. per hour. Six months after administration of streptomycin had been begun (fig. 1*b*), swelling and soreness had completely subsided and full motion of the knee had returned. Six months after streptomycin therapy had been stopped, the patient was taken off crutches and allowed full use of the knee (fig. 1*c*). She has been jumping, running and playing without restraint for one year (eighteen months since streptomycin therapy was stopped), with full use of her left knee and no recurrence of pain, swelling or other symptoms. Our impression is that this was a favorable response to streptomycin.

Case 2.—A white man aged 24 years had synovial tuberculosis of the right knee, demonstrated by histologic examination of the tissue from the knee on Dec. 14, 1946. There was no roentgenologic evidence of involvement of bone. A roentgenogram of the thorax revealed minimal active tuberculosis of both apexes. Specimens of sputum were positive for acid-fast bacilli before streptomycin was given, and became consistently negative within a few weeks after the start of therapy. The right knee had been swollen and painful for one year and the motion was limited between 90 degrees and 165 degress (fig. 2*a*). Administration of streptomycin (2 Gm. intramuscularly daily in divided doses every four hours) was started on Dec. 25, 1946, and was continued for ninety-one days for a total of 182 Gm. of streptomycin. In addition, once weekly for thirteen weeks 0.3 Gm. of streptomycin in 6 c.c. of isotonic solution of sodium chloride was injected into the joint. This invariably provoked some local soreness, swelling and increased heat, which gradually subsided in two to three days. Strict rest in bed was carried out for three months, although the patient was allowed to move the knee about freely. Within one month of the start of streptomycin therapy (fig. 2*b*) the swelling and pain had almost completely subsided and there was nearly a complete range of motion. Three months from the start of streptomycin therapy, a full range of motion had returned. The patient has been using the knee for six months since streptomycin therapy was stopped with no return of swelling, pain or limited motion. The pulmonary lesion is stabilized. Our conclusion is that this was a favorable response to streptomycin.

Case 3.—A Negro aged 22 years had advanced destructive changes of all bony surfaces of the right knee, as revealed by roentgenographic examination. The knee was swollen, tender, with considerable increase in temperature and painful on the slightest movement. A roentgenogram of the thorax revealed bilateral far advanced tuberculosis, largely of the exudative type with positive sputum. Because of the extreme destruction of the knee, streptomycin therapy was started in preparation for arthrodesis. Histologic examination of the tissue, culture and guinea pigs inoculated with material from the knee were all indicative of tuberculosis. Administration of streptomycin (2 Gm. intramuscularly daily in divided doses every four hours) was started and continued for one hundred and twenty-two days

Fig. 2.—(*a*) Swollen, boggy, painful knee for past year. (*b*) One month after biopsy and start of administration of streptomycin. Pronounced reduction in swelling and pain and increase in range of motion.

for a total of 244 Gm. of streptomycin. In addition, 0.4 Gm. of streptomycin was instilled into the joint at weekly intervals for fifteen weeks. At the end of this time, the knee was definitely improved. Swelling had subsided considerably. There was no pain with motion, and the patient walked without complaint. Arthrodesis was still advised because of the pronounced destruction of the joint, the economic background of the patient and the distinctly improved but still active bilateral pulmonary disease. Cultures on three occasions and five pairs of guinea pigs inoculated at approximately weekly intervals with the material from the knee were positive for tuberculosis for the first seventy-seven days of streptomycin therapy. After this, two cultures and six guinea pigs inoculated with the material from the knee two months apart were negative for tuberculosis.

The patient went home for one month and then returned for arthrodesis of the knee on May 24, 1947, and for a second course of streptomycin (0.5 Gm. intramuscularly every twelve hours for sixty-eight days). The incision healed by primary intention and ankylosis seemed solid within four months. The patient was fitted with a stiff leg brace, which he now wears. Remarkable clearing of the roentgenogram of the thorax occurred under streptomycin therapy and sputum became negative for acid-fast bacilli. Our conclusion is that this was a favorable response to streptomycin in that the thoracic lesions cleared considerably and streptomycin proved a valuable aid to operation on the knee.

Case 4.—A Negro woman aged 33 years has destructive tuberculosis of the right knee, which was demonstrated by histologic examination of tissue taken for biopsy at the time of arthrodesis on Jan. 21, 1947. She had two courses of streptomycin therapy, each of three weeks' duration. The first course of streptomycin (1.5 Gm. intramuscularly daily in divided doses every four hours) was begun at the time of arthrodesis. Sinuses developed after arthrodesis and have continued to drain to the time of writing. The second three week course of streptomycin

(1 Gm. intramuscularly every twelve hours) was given two months after the first at the time of the change of the cast. Our impression is that the patient derived no benefit. Treatment in this case was prophylactic.

CASE 5.—A white woman aged 21 years had progressive tuberculosis of the spinal column with a paravertebral abscess. A smear of the sinus of the back was positive for acid-fast bacilli in 1944. A roentgenogram of the thorax revealed a Ghon complex on the left side. In 1934 spinal fusion had been done for destructive arthritis of the bodies of the first to the fourth lumbar vertebrae. In 1945 a second spinal fusion was done for progressive involvement of the bodies of the eighth to the eleventh thoracic vertebrae with a paravertebral abscess. The patient continued to have thoracic spinal pain. One year after the second spinal fusion the patient received streptomycin for seventy-seven days (1.6 Gm. intramuscularly daily in divided doses every twelve hours) for a total of 123 Gm. The patient has continued to have thoracic spinal pain. Our impression was that streptomycin had not produced benefit in a late and extensive lesion.

CASE 6.—A white girl aged 17 years had progressive destructive arthritis of the bodies of the ninth, tenth and eleventh thoracic vertebrae. A smear from the sinus of the back was positive for acid-fast bacilli. The patient had three spinal fusions—in 1940, in 1943 and April 5, 1947. Streptomycin (1 to 2 Gm. intramuscularly daily in divided doses every four hours) was given for one hundred and sixty-two days beginning one month before the last spinal fusion for a total of 211 Gm. A draining sinus at the operative site has persisted to date. Our impression was that streptomycin did not produce benefit in this case.

CASE 7.—A white man aged 59 years had tuberculosis of the bodies of the tenth, eleventh and twelfth thoracic vertebrae. Roentgenograms of the thorax were negative for tuberculosis. Cultures of postoperative sinuses were positive for tubercle bacilli. In 1936 the patient underwent thoracotomy for what was believed to be an empyema of the left side of the thorax. This turned out to be a paravertebral abscess from tuberculosis of the bodies of the tenth, eleventh and twelfth thoracic vertebrae. Multiple sinuses formed postoperatively and drained for eleven years. The patient was totally disabled. Administration of streptomycin (0.25 Gm. intramuscularly every six hours) was started on March 28, 1947, and was continued for ninety-seven days and a total of 97 Gm. of streptomycin. Within seventeen days all sinuses healed; they have remained healed for six months. Spinal fusion was done on July 17. Healing of the incision was normal, and convalescence to the time of writing has been uneventful. Our impression is that this was a favorable response to streptomycin.

CASE 8.—A white woman aged 45 years had tuberculosis of the bodies of the ninth and tenth thoracic vertebrae. Roentgenograms of the thorax were negative for tuberculosis. Culture of draining sinuses of the right femoral region of three and a half years' duration was positive for tubercle bacilli. Sinuses developed after aspiration of a psoas abscess pointing in the femoral triangle. A spinal fusion on Jan. 30, 1946, had been unsuccessful, as the grafts absorbed, the sinuses continued to drain and the destructive process in the vertebral bodies progressed. Administration of streptomycin (0.5 Gm. intramuscularly every six hours) was started on Sept. 12, 1946, and continued for one hundred and sixty-six days. Treatment was stopped for two months after one week of administration of streptomycin because of a rash on the legs and arms, chills, fever, nausea and vomiting. Desensitization doses of streptomycin were restarted after one week until 2 Gm. daily was being given. This was continued until completion of the treatment at the end of one hundred and sixty-six days without event. Three months after the start of the streptomycin therapy the sinuses healed; they have remained healed for five months. On April 10, 1947, a second spinal fusion was done. Postoperative convalescence has been uneventful to date. Our impression is that this was a favorable response to streptomycin.

CASE 9.—A white girl aged 13 years had tuberculosis of the right ankle involving the subastragalar joint, later involving the tibioastragalar joint, and tuberculosis of the left elbow. A roentgenogram of the thorax revealed calcified hilar nodes and a calcified lesion in the upper lobe of the left lung. The patient was first seen at the clinic in 1944 because of cervical adenitis present since 1939 and an axillary adenopathy present since 1941, along with intermittent swelling and soreness of the right ankle and the left elbow. She was seen again July 14, 1945, at which time triple arthrodesis was done on the right ankle for destructive arthritis. Tissue removed at examination was positive by histologic examination and culture for tuberculosis. Healing of the incision and ankylosis of the region of triple arthrodesis were uneventful. On May 2, 1946, arthrodesis of the left elbow was done for progressive destructive arthritis. Healing and postoperative course were uneventful. On Aug. 7, 1946, roentgenographic examination revealed a spread of the tuberculous process into the tibioastragalar joint with pain and swelling, for which arthrodesis of this joint was done. One week prior to this, administration of streptomycin (1.2 Gm. intramuscularly daily in divided doses every four hours) had been started. This was continued for one hundred and three days for a total of 124 Gm. Convalescence was uneventful. Examination March 10, 1947, revealed a solid fusion of the ankle joint on which arthrodesis had been done. Eight months after administration of streptomycin was stopped the patient is clinically and roentgenographically cured. She has no pain or other symptom from the ankle or elbow. Our impression is that this was prophylactic treatment. No conclusions can be drawn as to benefit of streptomycin, as two previous arthrodeses healed uneventfully without benefit of streptomycin; however, clinically the patient gained weight and appears much improved.

CASE 10.—A white woman aged 28 years had tuberculous tenosynovitis of the right ankle, tuberculosis of the right sternoclavicular joint with a draining sinus and pulmonary tuberculosis with tuberculous empyema, a bronchopleurocutaneous fistula and multiple draining sinuses of the thorax. Tuberculosis was proved in 1942 by histologic examination of tissue from the thorax and cultures from the sinuses. The diagnosis of tuberculous tenosynovitis must be considered presumptive, as no biopsy, culture or studies on guinea pigs were carried out on the swollen soft tissues about the ankle. Roentgenograms of the ankle were negative for osseous changes.

Thoracoplasty and an unroofing operation were done in 1942 to obliterate and unroof the empyema cavity and to stop the draining sinuses. The sinuses continued to drain. The patient received "promizole" orally (6 to 10 Gm. daily) and "promizole" jelly locally from November 1943, through March 1944, without benefit. A cold abscess developed under the right breast during this period of treatment. Swelling over the lateral aspect of the right ankle, pain and limited motion continued. This patient had two courses of treatment with streptomycin. The first was begun Dec. 29, 1944, and continued for twenty-one days, 1.2 Gm. being given intramuscularly daily in divided doses every four hours for a total of 25 Gm. of streptomycin. At this time no more streptomycin was available. Administration of penicillin (100,000 to 200,000 units intramuscularly daily in divided doses every three hours) was started and continued for twenty-seven days. By this time the sinuses were almost completely closed and the patient went home.

The patient returned for further treatment Feb. 8, 1946, at which time she was considerably improved—only a small amount of drainage from the thoracoplasty scar remained. The bronchopleurocutaneous fistula was still present. Her right ankle was asymptomatic although still slightly swollen. Administration of streptomycin (1.2 Gm. intramuscularly daily in divided doses every four hours) was started and continued for sixty-four days for a total of 77 Gm. Nebulization of streptomycin mixed with penicillin (0.5 Gm. of streptomycin and 200,000 units of penicillin in 30 cc. of sodium chloride solution daily) was also started at the same time. Nebulization was stopped after seven days because it produced paroxysms of coughing. At this time the patient was unable to blow air through the bronchopleurocutaneous fistula for the first time in four years! The empyematic space was almost entirely obliterated by the sixty-fourth day and the patient was dismissed. She returned six months later, at which time the empyematic space was entirely healed. She made no complaints about the ankle. One year since administration of

streptomycin was stopped the patient's thorax remains entirely healed and the ankle appears normal. Our impression is that this was a favorable response to streptomycin.

CASE 11.—A white man aged 68 years had synovial tuberculosis of the right ankle demonstrated histologically by biopsy of swollen tissue over the tip of the lateral malleolus. The ankle had been swollen and painful for six or seven months. A roentgenogram of the ankle revealed no changes of bone. A roentgenogram of the thorax showed no abnormality. After biopsy, the ankle drained for four months. Streptomycin therapy (1 Gm. intramuscularly daily in divided doses every six hours) was started and continued for one hundred and five days and a total of 105 Gm. of streptomycin. Swelling and pain in the ankle diminished during streptomycin therapy. The patient is still under treatment. Our impression is that improvement of the patient under treatment is noted.

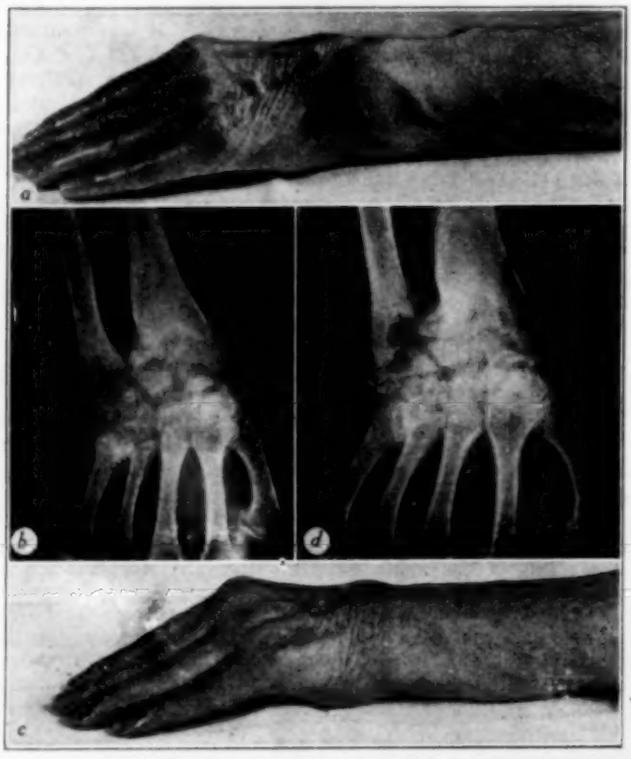

Fig. 3.—(a) Painful swelling of wrist of fourteen years' duration. (b) Appearance before start of administration of streptomycin. Destruction of wrist joint, carpal bones and proximal ends of metacarpal bones. (c) Nine months after cessation of streptomycin therapy. Swelling has subsided. (d) Appearance nine months after cessation of streptomycin therapy. Recalcification evident.

CASE 12.—A white man aged 39 years had tuberculosis of the right wrist proved by histologic examination, culture and inoculation of guinea pigs. He had a swollen, painful wrist of sixteen years' duration. Roentgenograms of the wrist revealed advanced destruction of all carpal bones and articular surfaces of the lower end of the ulna and the radius. A roentgenogram of the thorax revealed minimal inactive tuberculosis in the apex of the right lung. Streptomycin therapy (1.2 Gm. intramuscularly daily in divided doses every four hours) was started and continued for sixty-six days and a total of 72 Gm. A cast was applied to the wrist for four months. Two days after streptomycin therapy had been stopped, a sinus developed on the ulnar side of the wrist; this drained for several months. Swelling and pain subsided considerably during treatment. The roentgenogram revealed considerable recalcification of the involved bones of the wrist. Eighteen months after administration of streptomycin had been stopped the patient reported (by letter) that the wrist is "still swollen some" but not painful and there has been no drainage. Our impression is that this was a fair response to streptomycin.

CASE 13.—A white woman aged 58 years had a painful swollen wrist of fourteen years' duration (fig. 3*a*). Tuberculosis was proved by inoculation into guinea pigs of material from the wrist. A roentgenogram of the wrist revealed pronounced destruction of the lower 1 inch (2.5 cm.) of the radius and the ulna, the carpal bones and the proximal ends of the metacarpal bones (fig. 3*b*). A draining sinus had been present for four months. A roentgenogram of the thorax revealed inactive fibrous and calcified tuberculosis of both apexes. Administration of streptomycin (1.2 Gm. daily intramuscularly in divided doses every four hours) was started Jan. 26, 1946, and continued for fifty-seven days and for a total of 61 Gm. A cast was applied for four months. The sinus continued to drain for six months after administration of streptomycin had been stopped. Nine months after cessation of streptomycin therapy the wrist was no longer swollen (fig. 3*c*) and roentgenograms revealed recalcification of the carpal bones (fig. 3*d*). Eighteen months after administration of streptomycin had been stopped the patient reported that there was a little swelling and pain at times. Our impression is that there was a favorable response to streptomycin despite the short duration of treatment.

CASE 14.—A white girl aged 6 years had destructive arthritis of the carpal bones of the right wrist with swelling and pain of six months' duration. Histologic examination of tissue taken from the wrist for biopsy was positive for tuberculosis and a smear was positive for acid-fast bacilli. A sinus persisted for four months after biopsy. A roentgenogram of the thorax did not reveal tuberculosis. Administration of streptomycin (about 0.5 Gm. intramuscularly every twelve hours) was started Sept. 10, 1946, two weeks after biopsy, and was continued for eighty-five days and a total dose of 80 Gm. of streptomycin. A cast was applied to the forearm and hand and maintained until eight months after administration of streptomycin had been stopped. At this time the wrist was clinically healed with no redness or swelling. A roentgenogram revealed recalcification of the carpal bones. Our impression is that this was a favorable response to streptomycin.

CASE 15.—A white man aged 58 years had draining sinuses of both shoulders of several years' duration. A roentgenogram of the thorax revealed far advanced bilateral pulmonary tuberculosis. Smears of sinus material and sputum were positive for acid-fast bacilli, and cultures of the sputum were positive for tuberculosis. Administration of streptomycin (0.25 Gm. intramuscularly every six hours) was started Nov. 2, 1946, and continued for one hundred and twenty days for a total of 120 Gm. Within one month of the start of administration of streptomycin, both sinuses of the shoulders closed; they have remained so five months after cessation of streptomycin therapy. Two months and four months after streptomycin therapy had been stopped, however, sternal and scapular abscesses developed, and drainage has persisted to the time of writing. Streptomycin therapy has not been resumed. The patient's pulmonary status is unchanged. Our impression is that this was a favorable response to streptomycin in the shoulders.

Fig. 4.—Appearance of tuberculous lesion of the body of fourth lumbar vertebra and iliac bone.

CASE 16.—A white man aged 25 years had tuberculosis of the fourth lumbar vertebra and the right ilium (fig. 4) proved by inoculations into guinea pigs of pus from a psoas abscess in the right femoral triangle. Roentgenograms of the thorax revealed no abnormality. The patient had complained of pain in the right iliac region for two years. Roentgenograms of the lumbar portion of the spinal column revealed questionable narrowing of the fourth lumbar interspace. Biopsy of the iliac lesion was advised and carried out. Considerable purulent material welled from the incision when the abdominal muscles were stripped from the medial side of the ilium in obtaining a specimen for this biopsy. Cultures and inoculations into guinea pigs of this material were positive for tuberculosis. Administration of streptomycin (0.5 Gm. intramuscularly every twelve hours) was started Aug. 14, 1947, and continued for one hundred and twenty days for a total of 120 Gm. of streptomycin. Drainage had diminished to a drop or two in a day after two months of streptomycin therapy. The patient was still under treatment at the time of writing and the drainage has remained the same. The lesion in the right ilium has remained unchanged in appearance by roentgenographic examination. There has been some progression of the disease in the fourth lumbar interspace with minimal destruction of the right side of the inferior portion of the body of the fourth lumbar vertebra. Our impression is that the patient improved under treatment.

SUMMARY

Sixteen patients with tuberculosis of bones and joints have been treated with streptomycin. Three patients had involvement of multiple joints. Nineteen joints were involved. Sinuses were present in 4 cases before streptomycin therapy was begun. The average duration of treatment was one hundred and twelve days. The average total dose of streptomycin (0.75 to 2 Gm. daily) was 134 Gm. Mild to moderate toxic symptoms were found in 9 of 16 patients. In only 1 patient were symptoms severe enough to warrant discontinuing administration of the drug.

Response to streptomycin was considered favorable in 9 cases and fair in 1 case; there was no benefit in 4 cases, and the therapy was too recent to evaluate in 2 cases.

CONCLUSIONS

Considering the great difficulty which has been encountered in the treatment of similar conditions in the past, we are encouraged by this preliminary survey.

It is felt that 1 Gm. of streptomycin daily for ninety days is a satisfactory course of treatment in the light of present knowledge.

Radioactive Isotopes and the Microscope.--From the chain reacting piles of the Atomic Energy Commission have come radioactive isotopes which have been termed the most important tool for research in biology and medicine since the introduction of the microscope....However, it appears that in this field the most important contributions of radioactive isotopes will be in elucidating our understanding of the more fundamental mechanisms of diseases. At present there is no evidence that nuclear energy offers a cancer cure, and such predictions as have promised this are totally unrealistic and inaccurate. It appears that knowledge may be gained on the more fundamental mechanisms by which cancer develops, and such knowledge could lead to improved methods of cancer treatment. To explore further the role that nuclear energy may play in increasing our knowledge of cancer, the Atomic Energy Commission had launched a comprehensive program in this field.--Dr. John Z. Bowers, U.S. Atomic Energy Commission, From an address read before the National Convention of the Institute of Radio Engineers, New York, March 23, 1948.

CHOLANGIOGRAPHY IN STONE STRICTURE AND OPERATIVE INJURY OF BILIARY DUCTS

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A review of our experience with cholangiography in 90 consecutive patients who have had exploration of the common duct for stone, stricture or stenosis of the biliary tract emphasizes that: 1. Cholangiography is an accurate means of determining the presence or absence of disease in the biliary ducts. 2. Roentgen visualization of the biliary tree following the injection of an opaque medium is a simple diagnostic procedure. 3. More positive information can be obtained by cholangiography than by surgical exploration of the biliary ducts. 4. It is essential and advantageous to employ cholangiography at the time of operation. By this procedure lesions not evident to the surgeon may be demonstrated and reoperation avoided. 5. Postoperative cholangiograms are necessary to confirm the absence of disease in the duct system before the T tube is removed.

INDICATIONS FOR CHOLANGIOGRAPHY

The indications for cholangiography at the time of operation are essentially the same as those proposed by Lahey[1] and others for open exploration of the biliary tract. If any of the following conditions apply, it is believed that the ducts should be explored, and hence cholangiography is indicated: (1) if the patient is jaundiced at the time of operation or if there is a history of jaundice in the past; (2) if multiple small stones are found in the gallbladder at operation; (3) if the ducts are dilated or obviously diseased; (4) if a stone in the duct is suspected on palpation; (5) if a small fibrotic gallbladder is discovered; (6) if bile aspirated from the duct is muddy, or (7) if the liver is cirrhotic.

As Lahey[2] has indicated, a negative history of jaundice is not a trustworthy criterion for avoiding exploration of the common duct. There was no history of jaundice, and none was present at the time of operation in 39 per cent of a large series of his patients who later proved to have stones in the common or the hepatic duct.

In a minority of patients the indications for open exploration are not so clearcut, and the surgeon hesitates to subject his patient to the added risk of opening the duct system. That choledochostomy is not undertaken without added risk has been pointed out by Lahey (1932),[1] who estimated that the mortality in simple cholecystectomy was about 4 per cent, whereas the mortality jumped to 13 per cent if, in addition, the common duct was opened. Cole (1939)[3] using figures assembled from various sources, estimated that the over-all mortality in cholecystectomy was 6.5 per cent, but if choledochostomy was added the operative mortality rose to 10 per cent. Both of these estimates indi-

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

Read before the Section on Radiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Lahey, F. H.: Common and Hepatic Duct Stones, New England J. Med. 207:685-690 (Oct. 20) 1932.
2. Lahey, F. H.: Common and Hepatic Duct Stones, Am. J. Surg. 40:209-216 (April) 1938.
3. Cole, W. H.: Factors in Prognosis and Mortality of Gall-Bladder Disease: Collective Review, Surg., Gynec. & Obst. 69:40-46 (July) 1939.

cate that unnecessary exploration of the bile ducts is to be avoided. In this borderline group of patients cholangiography at operation can be of great value. Through its use unnecessary exploration of the ducts can be avoided, or if pathologic changes are demonstrated by the cholangiogram, corrective surgical measures can be introduced immediately (fig. 1).

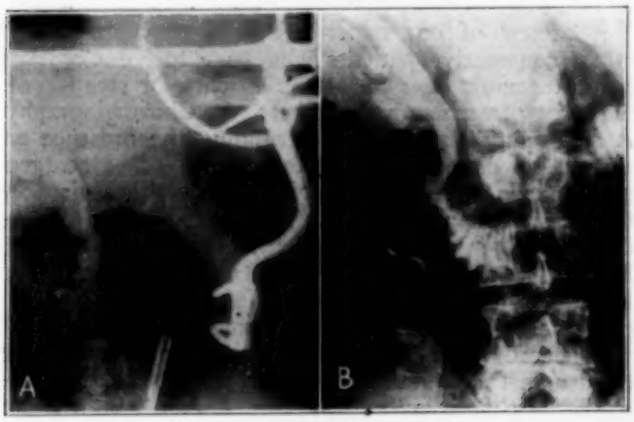

Fig. 1.—A—Cholangiogram made at time of operation. It shows obstructive dilatation of duct system with defect at distal end of common duct due to stone. B—Postoperative cholangiogram made two weeks after removal of stone. It demonstrates patency of common duct with residual slight dilatation of duct system.

We should like to add still another reason for the more frequent use of immediate cholangiography. If there is any reason to suspect injury to the bile ducts during operation, it is of fundamental importance to visualize the ducts before the abdomen is closed. Indeed it would seem logical to employ cholangiography even when the technical approach seems simple, as Gray [4] has suggested that the mobility of the ducts in uncomplicated cases increases the likelihood of their being pinched, kinked, ligated or transected during the isolation and ligation of the cystic duct and artery.

Since exploration of the common duct is practically always followed by T tube drainage of the duct, delayed cholangiography can, and should, be repeated at intervals after the operation until the bile ducts have returned to a normal or postoperative physiologic state. Rather frequently the common duct remains abnormally dilated for a considerable time after removal of obstructing duct calculi. In all of these cases postoperative cholangiography can demonstrate a return of the ducts to normal size and tone and will thereby furnish reliable information on which to base discontinuation of T tube drainage (fig. 2).

In most of our cases the T tube was left in the common duct one month; however, if the cholangiogram showed continued dilatation with delayed emptying of the common duct, the T tube was left in place for a second month or occasionally longer when indicated. We know of no instance in which the T tube has led to recurrence of stones or formation of stricture.

Stones not demonstrated at the time of the first operation can usually be detected by postoperative cholangiography. Likewise, changes occurring after operating—i.e., strictures, postoperative inflammatory narrowing of the ducts—can be visualized. Spasm of the sphincter of Oddi can usually be differentiated from organic obstruction by the relaxation of the spasm following the use of one of the nitrites. [5]

4. Gray, H. K.: Injuries to Extrahepatic Bile Ducts, Am. J. Surg. 40:217-222 (April) 1937.

5. (a) Walters, W.; McGowan, J. M.; Butsch, W. L., and Knepper, P. A.: Pathological Physiology of Common Bile Duct: Its Relation to Biliary Colic, J.A.M.A. 109:1591-1597 (Nov. 13) 1937. (b) Hunt, H. B.; Hicken, N. F., and Best, R. R.: Exploration of Biliary Ducts by Cholangiography During and Following Operation, Am. J. Roentgenol. 38:542-564 (Oct.) 1937.

METHODS[6] EMPLOYED IN IMMEDIATE AND DELAYED CHOLANGIOGRAPHY

In our experience we have found that more can be gained by actual delineation of the hepatic ducts, and in many cases the radicles, by rapid injection into the T tube using a syringe. Over the years we have tried a variety of opaque mediums and at present are satisfied with 35 per cent iodopyracet solution. When the injection method is employed the dye enters the ducts so rapidly that the relatively small opening through the ampulla does not permit rapid transit into the duodenum. Intraductal pressure accordingly rises enough to allow complete filling of the hepatic ducts and radicles. We have had no serious ill effects from the utilization of this method in well over one hundred cholangiograms. Roentgenoscopic control is utilized in the delayed examination. In this manner overdistention of the ducts can be prevented. A spot roentgenogram is taken under fluoroscopic control during the injection of the first few cubic centimeters of dye. The injection is repeated as regular 10 by 12 inch (25.4 by 30. cm.) or 14 by 17 inch (35.6 by 43.2 cm.) films are exposed. Films are exposed fifteen minutes and thirty minutes after injection to determine the amount of dye remaining in the biliary tree. During this half hour the T tube is clamped.

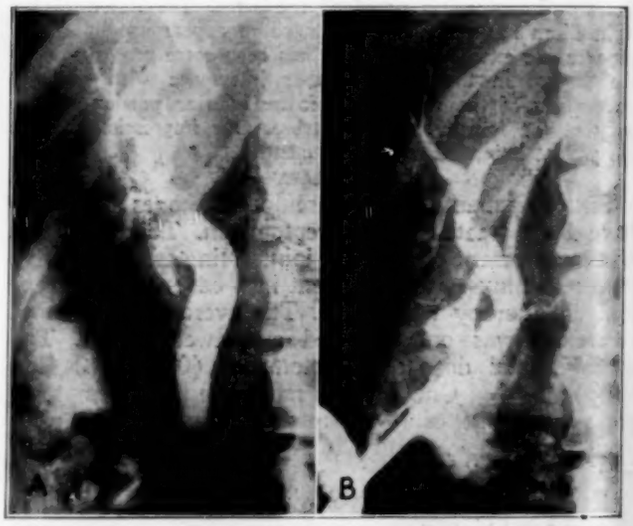

Fig. 2.—A—Postoperative cholangiogram made one month after removal of common duct stone. It illustrates obstructive dilatation of duct system despite use of amyl nitrite. Continued T tube drainage and reexamination in one month were advised. B—Cholangiogram one month later demonstrates patency of common duct and considerably less dilatation of duct system. Previous obstruction was probably due to residual inflammatory changes which subsided on further drainage.

COMMENT

Extrahepatic Duct Stones.—In the group with extrahepatic duct stones were 46 patients originally operated on at Cleveland Clinic Hospital for biliary disease. Either all presented a history consistent with a preoperative diagnosis of ductal disease or at operation the findings were such as to demand exploration of the common duct. In all patients the duct was first palpated, then probed and finally irrigated. Catheters were passed proximally into the hepatic ducts, and in every case the common duct was believed to be patent as a probe was passed distally into the duodenum.

Stones were recovered at operation in each one of the 46 patients. Thirty-three had cholelithiasis and choledocholithiasis, while 10 patients had stones only in the gallbladder. In the 3 remaining patients stones were recovered only from the common duct.

Eleven of the 46 (23.9 per cent) required a second

operation for a stone or stones not found at the first exploration. In 1 patient it was necessary to do a third operation before all the stones in the common duct were removed. Our incidence of cases in which stones were not found at first exploration parallels Mixter's

Fig. 3.—Stone found at ampulla as well as pronounced dilatation of duct system despite incomplete obstruction, as indicated by dye in duodenum.

incidence,[6d] 26.8 per cent. At the time of the first operation 9 of the 11 had stones in both the gallbladder and the common duct; 1 had stones in the gallbladder only; and 1 had stones in the common duct only. In 10 of the 11 patients the stones in the biliary duct were accurately identified by postoperative cholangiograms which were made within a thirty-four day period. The other patient was reexplored without having had postoperative cholangiography.

It is our opinion that this interval of time was too short for new intraductal stones to form and that reoperation might have been avoided in all 11 cases if cholangiography had been employed at the time of operation.

Abell [7] adequately explained the surgeons' difficulty when he stated that if many stones are present in the common duct it is not always possible for the surgeon to be sure he has removed them all. In addition he believes that if the gastrohepatic omentum is thickened because of edema and swelling or if the common duct passes directly through pancreatic tissue before entering the duodenum it is practically impossible to determine whether stones are present in the duct by palpation alone. One of our own cases beautifully illustrates this point. A second operation was performed to recover a stone not found at the first operation and later identified in the distal end of the common duct by a postoperative cholangiogram. At the second exploration no stone could be found after careful palpation of the entire common duct, but because of definite cholangiographic evidence, a transduodenal exploration of the common duct was undertaken and an almond-sized stone removed from the ampulla (fig. 3).

In addition to our own 46 patients there were 19 others who had had original biliary operations elsewhere. All of these required a second operation at the Clinic Hospital to remove from the biliary duct stones apparently not found at the first operation. Five of these 19 patients (25.2 per cent) required a third operation before all the stones were removed from the ducts. In 1 of these the stones were lodged in the hepatic ducts. Delayed cholangiography revealed the stones in 4 of these 5 patients. In the fifth patient, who had stones in the hepatic ducts, cholangiography failed to disclose the stones. We attribute this to a previous hepatoduodenostomy because, as will be explained later, it is not always possible to outline the hepatic ducts satisfactorily after this surgical procedure.

So far, immediate cholangiography has been used at this hospital on a proportionately small series of patients, but in none of these has reoperation been required to date. It is rather widely agreed that immediate cholangiography is not infallible in the presence of multiple small stones or gravel or sand, especially when there is no obstruction of the duct.

Extrahepatic Duct Stricture.—Twenty-five patients were referred to the Clinic with obstruction of the

Fig. 4.—Postoperative cholangiogram demonstrating reconstruction of severed common duct about T tube. Patency of anastomosis indicated by absence of dilatation and presence of dye in small bowel.

biliary tract due to stenosis or stricture of the common duct. Eleven of these patients required more than two operations, and a total of sixty-five surgical procedures were done on the 25 patients. Some type of surgical anastomosis was necessary in each instance to insure free flow of bile into the intestinal tract.

It is frequently difficult to determine by either history or surgical exploration the cause of these strictures. Jaundice with acholic stools was present in 22

6. (a) Best, R. R., and Hicken, N. F.: Technique of Immediate Cholangiography, Surg. Gynec. & Obst. 65:217-219 (Aug.) 1937. (b) Hunt, Hicken and Best. 5b (c) Hufford, C. E.: Postoperative Visualization of Biliary Tract. Am. J. Roentgenol. 37:154-166 (Feb.) 1937. (d) Mixter, C. G., and Hermanson, L.: Critical Evaluation of Cholangiography. Am. J. Surg. 40:223-231 (April) 1938. (e) Robins, S. A., and Hermanson, L.: Cholangiography: Modified Technique for X-Ray Visualization of Bile Ducts During Operation, Surg., Gynec. & Obst. 62:684-688 (April) 1936.

7. Abell, I., in discussion on Thompson, M., and Bell, J.: Cholangiography, Kentucky M. J. 38:280-285 (July) 1940.

of the 25 patients. Eight had the onset of jaundice from a few days to four weeks following the primary operation. The usual story described excessive drainage of bile occurring shortly after operation, persisting for a few days, then diminishing, only to be followed by the appearance of jaundice and acholic stools. In this group transection of the common duct at the first operation was believed to be the most common cause of trouble.

Six of the 25 patients were free of jaundice for one or more years, following the first operation, and 8 others had intermittent attacks of jaundice. In these 14 patients the cause of obstruction is debatable, but conjecture is permissible. Judd[8] was of the opinion that an obliterative inflammation can and does occur in the duct system. Gray,[4] on the other hand, believed that trauma at the first operation was a much more logical explanation of either immediate or delayed obstruction. Recently Cattell[9] reported a series of 123 benign strictures of the biliary ducts, 80 per cent of which were caused by operative injury.

Cholangiography at the time of the second exploration is seldom feasible if the ducts have been cut or traumatized. Either the proximal end of the cut duct retracts into the liver bed, or what remains of the duct is hardly more than a fibrotic cord, making it impossible to inject opaque material. However, if the common duct can be reconstructed over a T tube, injection of dye through the tube will give additional information as to the character and patency of the anastomosis (fig. 4).

Cholangiograms following choledochoduodenostomy or hepatoduodenostomy are primarily of value to show the flow of dye into the duodenum. With such anastomosis the action of the sphincter of Oddi is eliminated, and it is usually impossible to build up sufficient intraductal pressure to visualize completely the hepatic radicles.

SUMMARY

Postoperative cholangiography was 93.3 per cent accurate in demonstrating in the common duct stones not found at previous surgical explorations. Cholangiography at the time of operation can lower the incidence of reoperation for stone or for ductal trauma and prevent stricture due to unrecognized operative trauma. Operative cholangiography in the presence of stricture, stenosis or transection of the common duct may not be feasible. Delayed cholangiography in this group can demonstrate the patency of the newly constructed anastomosis. In all cases, postoperative cholangiography provides the best criteria for discontinuing T tube drainage.

8. Judd, E. S.: Stricture of Common Bile Duct, Ann. Surg. 84:404-410 (Sept.) 1926.
9. Cattell, R. B.: Benign Strictures of Biliary Ducts, J.A.M.A. 134:235-239 (May 17) 1947.

ELECTROENCEPHALOGRAPHIC STUDIES IN POLIOMYELITIS

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There has been much speculation as to the extent of cerebral involvement in poliomyelitis. Recent pathologic and experimental material has suggested that it is greater than what would be suspected on clinical grounds.

The proportion of cases with frank clinical manifestations of encephalitis is relatively small in most epidemics of poliomyelitis. In those instances, the drowsiness deepening into coma, often profound and prolonged, the tremors and the rigidity, leave no doubt as to the invasion of the brain by the disease process. Involvement of the brain is much less certain in milder clinical pictures, although it has been suspected as an explanation of the unusual emotional states often encountered during the acute stage of poliomyelitis. As for the disturbed behavior which has been known to occur as a late sequel of poliomyelitis, and which is being extensively studied,[1] most explanations have been based on the psychologic trauma of crippling disabilities and prolonged hospitalization. However, the possibility that some of those disturbances may have an organic basis analogous to other postencephalitic states has by no means been excluded, and remains for our further consideration.

In the monkeys inoculated with poliomyelitis virus by Hurst,[2] no part of the central nervous system ever entirely escaped damage. Sabin and Ward[3] demonstrated lesions in the basal ganglions, midbrain and hypothalamus in monkeys with nonparalytic poliomyelitis. Bodian and Howe[4] have demonstrated that in monkeys in whom experimentally produced poliomyelitis was nonparalytic, almost every degree of severity and spread of pathologic change could occur. It is conceivable that this may be true of nonparalytic and nonencephalitic cases among human beings as well. Pathologists have for many years pointed out that poliomyelitis affects the central nervous system in a most diffuse manner[5] and that in human necropsy material there is a disparity between the severity of the lesions found in the brain and the clinical indications of encephalitis.[6] However, cases of severe disease with fatal outcomes are necessarily those on which such observa-

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Read before the Section on Pediatrics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. (a) Ebaugh, F. G., and Hoekstra, C. S.: Psychosomatic Relationships in Acute Anterior Poliomyelitis, Am. J. M. Sc. 213:115-121 (Jan.) 1947. (b) Stanfield, C. E.: Personality Repurcussions of Anterior Poliomyelitis: A Review of the Literature, ibid. 213:109-114 (Jan.) 1947. (c) Crothers, B., and Meyer, E.: The Psychologic and Psychiatric Implications of Poliomyelitis, J. Pediat. 28:324-326 (March) 1946. (d) Myer, E.: Psychological Considerations in a Group of Children with Poliomyelitis, ibid. 31:34-38 (July) 1947.
2. Hurst, E. W.: The Histology of Experimental Poliomyelitis, J. Path. & Bact. 32:457-477 (July) 1929.
3. Sabin, A. B., and Ward, R.: The Nature of Non-Paralytic and Transitory Paralytic Poliomyelitis in Rhesus Monkeys Inoculated with Human Virus, J. Exper. Med. 73:757-770 (June) 1941.
4. Bodian, D., and Howe, H. A.: Experimental Non-Paralytic Poliomyelitis: Frequency and Range of Pathologic Involvement, Bull. Johns Hopkins Hosp. 76:1-17 (Jan.) 1945.
5. Faber, H. K.: Acute Poliomyelitis as a Primary Disease of the Central Nervous System: A Review, Medicine 12:83-136 (May) 1933.
6. Peers, J. H.: The Pathology of Convalescent Poliomyelitis in Man, Am. J. Path. 19:673-695 (July) 1943. Wiglesworth, F. W.: Personal communication to the author.

tions were made. Until there are more pathologic studies of cases of nonfatal poliomyelitis in which death was due to an unrelated cause the problem will remain unsettled.

In the meantime, it would seem reasonable to consider whether electroencephalographic analysis of patients with poliomyelitis might serve as a useful extension of our clinical criteria of encephalitic involvement in poliomyelitis.

MATERIAL AND METHODS

Fifty patients who contracted poliomyelitis in the summer and autumn of 1946 were examined electroencephalographically. An effort was made to include as many patients as possible with definite signs of encephalitis: These comprised only 18 per cent of the series. The remainder of the cases were taken at random and included a variety of clinical pictures due to poliomyelitis. Thirty-nine of the 50 patients were under 14 years of age, distributed fairly evenly between the ages of 2 and 13 years. The others ranged in age from 14 to 34 years. These children and the adults were patients at the Children's Memorial Hospital or the Alexandra Hospital,[7] with the exception of 2 whom members of the attending staff of the Children's Memorial Hospital enabled us to include in this series.

A total of sixty-four electroencephalographic examinations were made. Thirty-nine of the patients were examined once, 10 twice, and 2 were examined three times. Fifteen of the patients were examined within three months of the onset of their disease. Eleven of these were reexamined after an interval of five to eight months, the other 4 not being available for reexamination. One patient was examined four months after his disease began and again three months later. Each of the remaining 34 patients had a single electroencephalogram taken between four and eight months after the onset of poliomyelitis.

We were interested in the various clinical manifestations of encephalitis in these patients. Five children were comatose for periods varying from several hours to twenty-five days. In 3 of these, generalized plastic rigidity was an outstanding feature; on disappearing, it left a spastic hemiparesis in its wake, which was indistinguishable in 1 case from that caused by an upper motor neuron lesion. In this latter instance, aphasia was also present. Two of these children exhibited coarse tremors, of a type usually associated with lesions of the basal ganglions. A sixth child was profoundly apathetic and irritable, although retaining consciousness, and showed gross tremors and incoordinate movements. These 6 patients were considered to have had manifestations of severe encephalitis. Three other patients were classified as manifesting moderate encephalitis; 1 young adult was confused and irrational for two days; 1 child wandered from his bed, apparently disorientated, and in addition exhibited occasional coarse tremors; 1 child had a convulsion, and later strolled right out of the hospital.

Lesser degrees of drowsiness, apathy, delirium or irritability, mostly accompanying fever, occurred in 14 patients. These reactions were not more pronounced than what one sees during the acute stage of many infectious diseases in children, though they may well represent a mild encephalitic involvement of some sort. For the purpose of this study these patients were classified as manifesting slight encephalitis. Finally there were 27 patients who manifested no such symptoms at any stage of their disease, and these were classified as showing no apparent clinical signs of encephalitis.

In assessing the problems of behavior and personality in these patients, we had recourse only to information obtained from the case reports and the nursing staff as to behavior during the stay in the hospital, and from the parents or close relatives as to behavior after discharge. (It is hoped to include psychiatric examination of these patients in a long term study of these relationships; this is planned for the near future.) Eleven patients, all children, were reported to have shown moderate or severe personality disorders. (Only 3 of these had much physical disability.) Emotional instability, as shown by a tendency to weep (less commonly to laugh) on slight and quite inadequate provocation, was common to all of these children. This feature has been noted in previous studies. Four were having trouble in school, due, it was thought, to increased difficulty in learning, although in 1 case it was felt that the child could learn as well but at a slower rate than hitherto. All these children were more irritable, some to an extreme degree. Four were reported to have become aggressive. Two had fear fantasies, and one was negativistic. Besides these 11, 9 children showed mildly disturbed behavior. In 7 of these, unwarranted weeping was the chief change. Three had night terrors in addition. One child became unwontedly submissive: 1

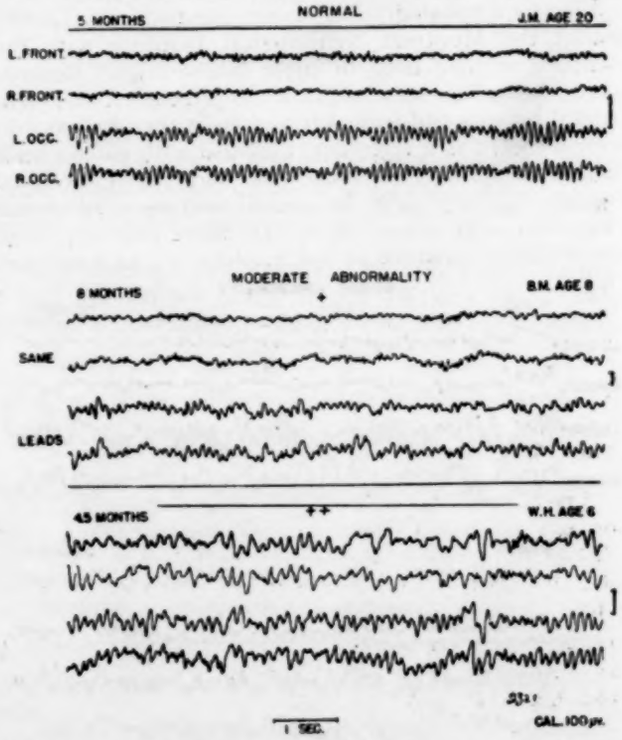

Fig. 1.—J. M., aged 20, experienced the onset Aug. 27, 1946, of fever, meningeal signs and symptoms, scattered muscle spasm and extensive paralytic involvement of both lower extremities. Bulbar or encephalitic manifestations were not evident, but difficulty was experienced in voiding and defecating for several days. Considerable pleocytosis was present, and a positive reaction to the Pandy test in cerebrospinal fluid. There was no personality change. B. M., aged 8, suffered the onset July 27, 1946, of fever, headache and nuchal rigidity. Weakness in left calf and nasal tone of voice developed with deviation to the left of the palate. There was moderate pleocytosis and a positive reaction to the Pandy test in the cerebrospinal fluid. B. M. has been irritable since then and does not maintain previous good standard of school work. W. H., aged 6, experienced the onset Sept. 4, 1946, of fever, headache, vomiting, drowsiness, confusion and finally coma for several days. There was slight meningeal irritation, spotty distribution of muscle spasm and weakness. Generalized clonic movements and plastic rigidity were most pronounced in the right upper limb; there were pleocytosis and positive reaction to the Pandy test in the cerebrospinal fluid; persistent right spastic hemiparesis with gradual improvement; emotional instability during early convalescence with no residual personality disorder.

7. Dr. E. M. Worden granted us permission to examine the records of the poliomyelitis wards at the Alexandra Hospital.

seemed to lose all affective feeling toward his siblings. The remaining 30 patients were reported to exhibit no change in their behavior not easily accounted for (for example, several parents remarked that their children had become spoiled since they had been ill).

In addition to the 50 patients described, 8 children were examined five years after acute poliomyelitis (in 1942). Their protocols were taken at random from the files of the Children's Memorial Hospital. None had a history of pronounced signs of encephalitis, although in 1 child the mother reported unusual drowsiness for four days prior to admission. Questioning the parents with regard to behavior revealed that in 2 behavior difficulties had become sufficiently great to require psychiatric treatment. In 1 other child there was poor emotional adjustment during convalescence, while in the remaining 5 children no significant behavior difficulty was noted. The results of the electroencephalographic examination of this group of patients will be considered separately as a preliminary study of the possible late residual changes.

Electroencephalographic examinations were carried out at the Montreal Neurological Institute with the standard technic used in these laboratories.[8] Records were taken under standard conditions from left and right frontal regions and from left and right occipital regions with the ears as a reference, and also with paired leads on the scalp over frontocentral and parieto-occipital regions on each side. In special instances additional electrodes were placed to localize more precisely some abnormality apparent in the exploratory examination.

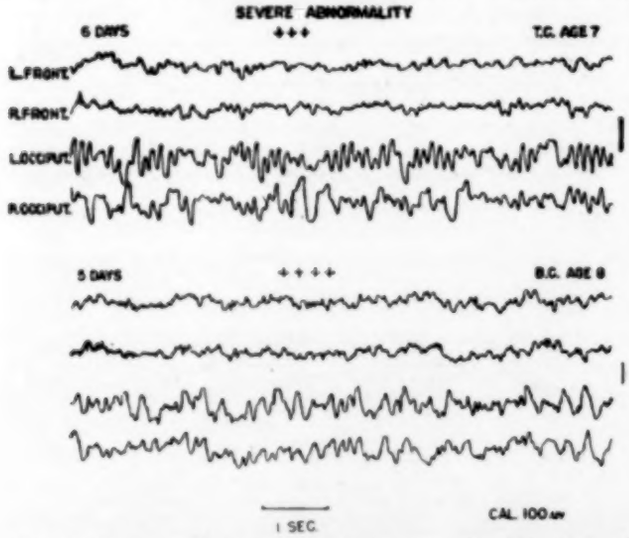

Fig. 2.—T. C., aged 7, experienced the onset Aug. 27, 1946, of moderate meningeal symptoms. There was minimal scattered muscle group weakness, left upper and lower limbs, with no residual disability; pleocytosis and elevated protein in cerebrospinal fluid. The palate was paralyzed to a moderate degree for several days. No change in personality occurred. B. C., aged 8, experienced the onset Sept. 1, 1946, of slight fever, symptoms of meningeal irritation, some drowsiness and slight confusion in first few days. There was no evidence of cranial or spinal nerve paralysis. A slight pleocytosis and a positive Pandy reaction in cerebrospinal fluid were present. B. C. is now emotionally unstable and aggressive, receiving unsatisfactory grades at school.

Hyperventilation for two to three minutes was carried out in most cases. In many cases, when the response to hyperventilation was pronounced, 75 Gm. of glucose was administered by mouth and the hyperventilation repeated in twenty to thirty minutes in order to rule out a response to hyperventilation facilitated by low blood sugar.

8. Jasper, H. H.: Electrical Activity of the Brain, in Luck, J. M.: Annual Review of Physiology, Stanford University, Calif., Annual Reviews, Inc., 1941, vol. 3, pp. 377-398.

The electroencephalographic records were interpreted as they were taken by either Dr. Herbert Jasper or Dr. David Daly and the degree of abnormality indicated on an arbitrary scale of 1 to 4 plus (figs. 1 and 2), somewhat similar to that described by Jasper and Kershman for electroencephalograms in patients with head injuries.[9] Special allowance was made for the slower spontaneous rhythms and the greater amount of irregularity normally observed in young children. The normal tendency for children to be more readily affected by hyperventilation was also taken into account in the interpretation of these records. However, when high-voltage slow waves appeared after thirty seconds to one minute of hyperventilation and were repeated after the administration of glucose, it was considered of some significance in the evaluation of the degree of electroencephalographic abnormality. This reaction was considered of more definite significance in children over 10 years of age.

Finally, after the present series was complete all the electroencephalogram records were reviewed by one of us (H. H. J.) and the ratings as to the degree of abnormality reconsidered. It was found that a few of the records had to be reclassified slightly but that in most instances the original classification was retained, and

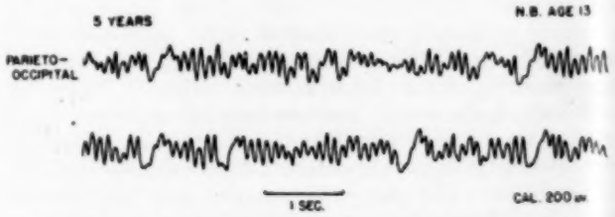

Fig. 3.—Fused alpha activity. N. B., aged 13, experienced the onset Aug. 6, 1942, of headache, listlessness and meningeal signs and symptoms. There was paralytic involvement mainly of the right upper limb. Extensive and persistent muscle spasm occurred with development of severe scoliosis; moderate pleocytosis was present and a positive reaction to Pandy test in cerebrospinal fluid. N. B. was a behavior problem during early convalescence with objectionable attention-securing maneuvers. No residual change has occurred.

what is more important, the classifications given by Dr. Daly independently were in most instances confirmed exactly by one of us (H. H. J.) in the final review of the records.

RESULTS

The form of abnormality consisted chiefly of the replacement of the normal alpha and beta rhythms more or less completely by slow waves of moderate voltage at frequencies from about 6 per second down to as slow as 1 per second in the extreme cases (figs. 1 and 2). In the cases of milder disease the disturbance was frequently limited to a curious irregularity in the parieto-occipital alpha rhythm giving the appearance of the fusion of a number of alpha waves into an irregular slow wave (fig. 3). This "fused alpha" picture was observed to form a part of the abnormality in 26 of the 37 patients with abnormal electroencephalographic records. In the cases of more severe disease the slow wave abnormality appeared diffusely from all head regions but was often particularly prominent when the ears were used as reference electrodes ("monopolar"), which suggests involvement of subcortical cerebral structures. This was confirmed in some instances by means of the "basal lead" placed on the posterior part of the nasopharynx. In a few cases one hemisphere seemed much more involved than the other, and occasionally the abnormality seemed greater from a

9. Jasper, H. H.; Kershman, J., and Elvidge, A.: Electroencephalographic Studies of Injury to the Head, Arch. Neurol. & Psychiat. 44: 328-350 (Aug.) 1940.

particular brain area, though in no cases was focal abnormality present without some disturbances in the electrical activity of the rest of the brain. In all cases showing any abnormality whatsoever there was a disturbance in the parieto-occipital alpha rhythm of both hemispheres.

The sudden appearance of slow waves, 3 to 6 per second, of increased voltage during a short period of hyperventilation (one to two minutes) was found in 14 of the 32 patients in whom this test was carried out (fig. 4). In 13 of these 14 positive reactions the patients

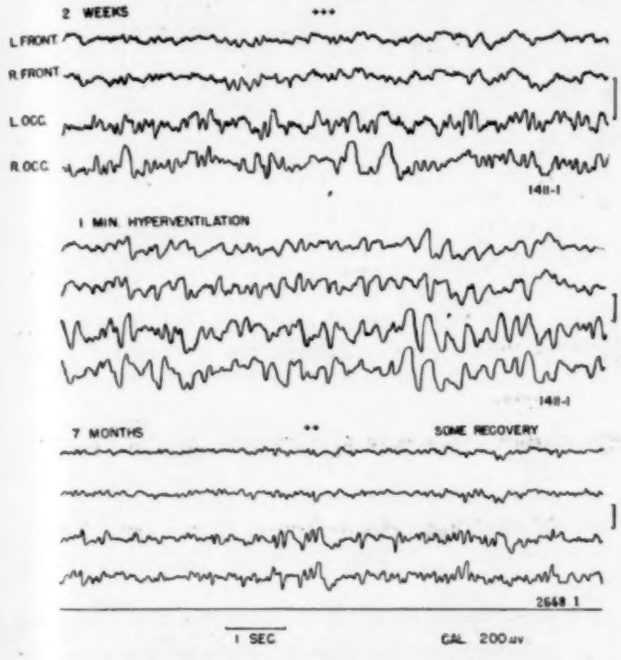

Fig. 4.—M. C., aged 10, had a difficult forceps birth and experienced fainting spells throughout early childhood, usually when fasting or when riding streetcars. There was insidious onset Aug. 9, 1946, of malaise, slight fever, anorexia and vomiting. A few fainting spells, headache and pain in the back and legs preceded a brief tonic convulsion for which she was admitted August 21. She was afebrile and well thereafter, although disorientated on the second day in the hospital. Fasting blood sugar and nonprotein nitrogen levels and roentgenograms of the skull were normal. Protein in cerebrospinal fluid was elevated. Minimal transitory paralysis of the right lower limb, a suggestion of acute encephalopathy in the electroencephalogram, and occurrence of definite poliomyelitis in a sibling soon after, indicated a diagnosis of polioencephalitis. There was no change in personality.

were under 10 years of age. Only 7 of the 18 patients giving negative reactions were under 10 years of age. The greater proneness of children to electroencephalographic disturbances with hyperventilation is well recognized, so that an evaluation of these reactions in young children following poliomyelitis is difficult. We are of the impression, however, that the reactions observed in this group were more severe and of higher incidence that would be expected in a random sampling of "normal" children in this age group,[10] although the final interpretation of this observation must await further study.

Fifteen patients were examined initially during the first three months, including 9 patients examined within five to twenty days of the onset of their illness. Abnormal electroencephalograms were found in all these patients; the abnormalities were considered mild or moderate in 8 cases and severe in 7 cases. Of the 11 patients who were reexamined five to eight months later the electroencephalogram had returned to normal in 4, while definite residual abnormalities (4 moderate and 3 severe) were present in the remaining 7 patients.

10. Liberson, W. T., and Strauss, H.: Electroencephalographic Studies: Slow Activity During Hyperventilation in Relation to Age, Proc. Soc. Exper. Biol. & Med. **48**: 674-676 (Dec.) 1941.

Examples of patients showing definite recovery in the electroencephalogram are presented in figures 5 and 6.

The incidence of electroencephalographic abnormality in the total group of 50 patients examined within eight months after the onset of poliomyelitis is show in table 1.

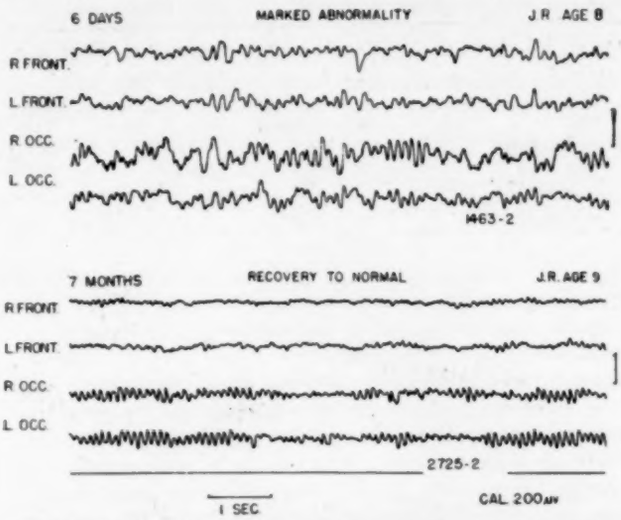

Fig. 5.—J. R., aged 8, experienced the onset Aug. 31, 1946, of fever and severe meningeal irritation, and was delirious for two hours on the third day. Widespread paralysis developed with absent tendon reflexes in right lower limb, as well as persistent spasm and early contracture of right calf muscles. There was pleocytosis and a positive Pandy reaction in cerebrospinal fluid. Since this time J. R. has nightmares and fear fantasies, and weeps on slight provocation.

Normal electroencephalographic records were obtained in only 13 (26 per cent). Of the 74 per cent of cases showing abnormality, in 26 per cent the abnormalities

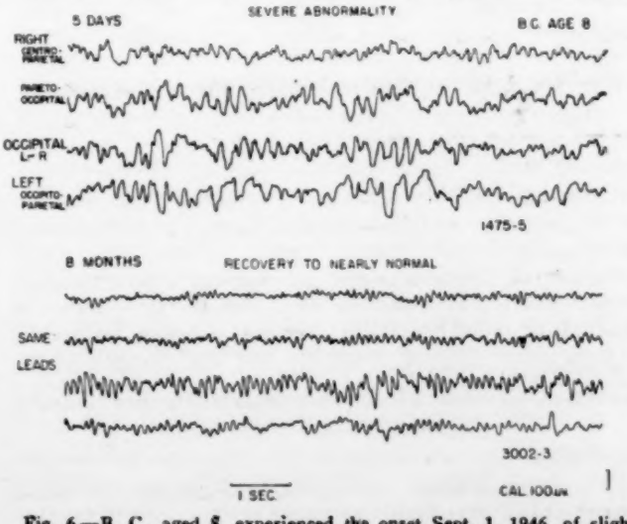

Fig. 6.—B. C., aged 8, experienced the onset Sept. 1, 1946, of slight fever, symptoms of meningeal irritation, some drowsiness and slight confusion in first few days. There was evidence of cranial or spinal nerve paralysis; slight pleocytosis and positive Pandy reaction in cerebrospinal fluid were present. B. C. is now emotionally unstable and aggressive, receiving unsatisfactory grades at school.

were considered severe and in 48 per cent moderate. There was a clear tendency for more electroencephalographic abnormality to be found in the patients under 14 years of age (82 per cent) as compared with those over 14 years of age (46 per cent). In only 1 of the latter group was the electroencephalographic abnormality considered severe.

In order to eliminate the more acute and more rapidly reversible effects of the disease on the electroencephalogram, results from 46 patients examined between four and eight months after the onset of the illness were

considered separately in table 2. There were 30 patients in this group (65 per cent) who showed definite residual abnormality in the electroencephalogram; in 23 it was considered of moderate degree (48 per cent) and in 8 it was considered severe (17 per cent). The importance of age is equally clear in this group, since electroenceph-

TABLE 1.—*Initial Electroencephalograms in Patients Having or Convalescent from Acute Poliomyelitis*

		Under 14 Years	Over 14 Years	Total
Patients Examined		39	(11)	(50)
Abnormal E.E.G.	Severe	30.8%	9.9%	26%
	Moderate	51.3%	36%	48%
	Total	82.1%	46%	74%
Normal E.E.G.		17.9%	54%	26%

alographic abnormality was present in 74 per cent of patients under 14 years of age and in only 36 per cent of those over 14, none of the latter group having abnormality of severe degree.

In a further preliminary attempt to ascertain how long these electroencephalographic changes may persist we have examined 8 patients five years after the acute attack of poliomyelitis. In 5 of these patients definite abnormalities were observed in the electroencephalogram, considered of severe degree in 2 and of moderate degree in 3. In addition one of us (H. H. J.) with Dr. Penfield has recently examined a patient with extremely

TABLE 2.—*Electroencephalograms 4 to 8 Months After Onset of Poliomyelitis*

		Under 14 Years	Over 14 Years	Total
Patients Examined		35	11	46
Abnormal E.E.G.	Severe	22.9%	0%	17.4%
	Moderate	51.4%	36.3%	47.8%
	Total	74.3%	36.3%	65.2%
Normal E.E.G.		25.7%	63.6%	34.8%

severe residual electroencephalographic abnormality of a diffuse character which resulted from a severe attack of polioencephalomyelitis fifteen years ago. There was residual lower motor neuron paresis of the lower extremities, but the patient was referred to us because of severe and persistent generalized epileptiform seizures which developed fifteen years after the acute encephalitis. There was also a progressive deterioration in personality. This patient presented the most extreme residual of polioencephalitis yet encountered, both with regard to the clinical condition and the changes in the

TABLE 3.—*Initial Electroencephalograms and Clinical Encephalitis in Poliomyelitis*

		Severe Encephalitis	Moderate Encephalitis	Mild Encephalitis	No Clinical Encephalitis
Patients Examined		6	3	14	27
		Severe Encephalitis	Moderate Encephalitis	Mild Encephalitis	No Clinical Encephalitis
Abnormal E.E.G.	Marked	2	1	3	5
	Moderate	4	2	7	12
	Total	6	3	10	17
Normal E.E.G.		0	0	4	10

electroencephalogram, but the difference should probably be considered one of degree rather than of kind when compared with the other cases in this series.

The relation between the clinical signs of encephalitis and the degree of abnormality in the electroencephalogram was examined (table 3). All of the 9 patients who had been considered to have shown clinical signs of severe moderate encephalitic involvement during the acute stage of their disease were found to have abnormal electroencephalograms (6 moderate and 3 severe). The electroencephalographic records were not taken during the acute stage of the disease, all but one being taken two to six months later. In the 1 case a severe electroencephalographic abnormality was observed two weeks after the onset of the disease, after the acute clinical signs had subsided, and a pronounced electroencephalographic abnormality was still found on reexamination seven months later. Of the 14 patients who showed only mild signs of clinical encephalitis, there were 10 who showed abnormalities in the electroencephalogram (7 moderate and 3 severe). Two of those with severely abnormal electroencephalograms were examined within the first week of the illness so that the changes represented the acute phase of the disease; in the third patient with severe electroencephalographic changes the electroencephalogram was taken five months after the acute onset. Of the 27 patients with no apparent clinical signs of encephalitis there were 17 with abnormal electroencephalograms (12 moderate and 5 severe). Of the 5 patients with severe electroencephalographic changes only 3 were examined within the first three weeks of the disease. There were 15 of the 27 patients with no obvious clinical encephalitis who showed persistent electroencephalographic abnormality between one and eight months following the onset of the disease.

Table 4 summarizes the correlation between the electroencephalographic abnormality and the behavior disturbance following poliomyelitis in our patients. Ten of 11 patients with severe behavior disturbances showed abnormal electroencephalograms, while 6 out of 10 with normal behavior showed abnormal electroencephalograms.

TABLE 4.—*Final Electroencephalograms and Disturbed Behavior Following Poliomyelitis*

		Marked Behavior Disturbance	Mild Behavior Disturbance	Normal Behavior
Patients Examined		11	10	25
Abnormal E.E.G.	Marked	2	2	4
	Moderate	8	4	8
	Total	10	6	12
Normal E.E.G.		1	4	13

The relation of electroencephalographic abnormality to the level of paralytic involvement was considered. Thirty-seven of the 50 patients had evidence of lower motor neuron paralysis. In 9 of these the involvement was confined to the cranial nerves, in 20 to the spinal cord, and in 8 there were both cranial and spinal involvement. The other 13 patients showed no apparent paralysis. Twenty-seven out of 37, or 73 per cent, with paralysis had abnormal electroencephalograms (17 moderate, 10 severe), whereas 9 of 13 (69 per cent) without paralysis had abnormal electroencephalograms (5 moderate, 3 severe). In the 9 patients with paralysis confined to the cranial nerves, 8, or 89 per cent, had abnormal electroencephalograms (5 moderate, 3 severe). In the 20 patients with paralysis confined to the muscles supplied by the spinal nerves, 13, or 65 per cent, had abnormal electroencephalograms (8 moderate, 5 severe). Six of the 8 patients, or 75 per cent, with both cranial and spinal involvement had abnormal electroencephalograms (4 moderate and 2 severe). Although the number of patients is not large enough to permit definite conclusions to be drawn, these figures suggest a tendency for patients with involvement of the cranial nerve to have a higher incidence of electroencephalographic abnormality than patients with spinal nerve paralysis or without any paralytic involvement.

COMMENT

Evaluation of the significance of electroencephalographic abnormality of the diffuse nonspecific form observed in many of the patients in the present study must be made with some caution if these changes are to be definitely attributed to polioencephalitis. Since in no patients were there available electroencephalograms taken prior to this disease, the question of some form of encephalopathy existing prior to the polioencephalitis must be considered. In the first place such factors as hereditary nervous disease, birth difficulty or injury, previous encephalitis of any form or previous severe head injury were not notably prominent in the group of cases studied. In 1 case (M. C.) (fig. 4) there was a history of difficult forceps birth and "fainting spells" prior to the polioencephalitis. There were only 2 other patients in this group whose previous medical history might have had a bearing on this problem; namely, a girl who had been brought to the outpatient clinic for "nervousness" and behavior difficulty and a boy who appeared to have been mentally retarded. None had a previous history of encephalitis of any form. Unfortunately, facilities have not been at our disposal for a thorough neuropsychiatric analysis as is being carried out in Denver by Dr. Ebaugh and his associates.[10] Such a study is planned for the subsequent follow-up of these patients. It can be said at present, however, that there was no evidence available in the previous histories of all but 2 or 3 of the patients in this series which might have contributed to the electroencephalographic abnormalities observed after their attack of poliomyelitis.

The criteria of electroencephalographic abnormality used in this study were severe. We have ignored minor irregularities, and in the younger children even rather pronounced irregularities, which might be considered of borderline significance in a random sampling of the "normal" population of this age group. Consequently the high incidence of 74 per cent definite electroencephalographic abnormality observed can be reasonably explained only on the basis of some encephalopathy due to the poliomyelitis virus.

The form of electroencephalographic abnormality was also more consistent with an encephalitic etiology,[11] although its diffuse character might have been due to other causes. Except in 1 or 2 cases there was no suggestion of the form of abnormality usually found in patients with idiopathic epilepsy. The peculiar disorder of the parieto-occipital alpha rhythm, termed "fused alpha" (fig. 3) was particularly prominent in this series of cases, although it cannot be considered specific for polioencephalitis. It may represent a disorder in the diencephalic regulating centers for cortical rhythms rather than a specific involvement of the occipital cortex itself, since cortical rhythms often reflect conditions existing in their subcortical projection nuclei.

Finally, the fact that the electroencephalographic abnormality was always most severe (except in 1 patient) if the examination was carried out during the first week of the illness and that definite recovery was observed in records taken several months later, some returning completely to normal (fig. 5), is perhaps the strongest argument in favor of the assumption that the disturbances in the electroencephalogram were, in most instances, a manifestation of the effects of polioencephalitis.

The difference between the incidence of electroencephalographic abnormality in the children and the incidence in the adults of this series is arresting. When Ebaugh and Hoekstra [1] in Denver reported that there was no significant abnormality in the electroencephalograms of patients who had had poliomyelitis, we were struck by the discrepancy between this finding and our early results, which were disclosing a rather high incidence of abnormality. The Denver investigators had, however, purposely selected patients over 14 years of age in order to facilitate psychiatric examination, whereas we were dealing with patients of a wider age group, and mainly with children. We then analyzed our findings with regard to age (tables 1 and 2). The low incidence of abnormality in the group over 14 was in substantial agreement with the findings in Denver, but the strikingly high incidence of electroencephalographic abnormality in the children of this series is the significant new fact disclosed. It is difficult to explain this selective susceptibility of children to electroencephalographic disturbances following an attack of poliomyelitis.

A close correlation between clinical and electroencephalographic evidence of encephalitis has been demonstrated in one direction at least, inasmuch as all 9 patients with recognizable encephalitis had definitely abnormal electroencephalograms (table 3). In addition, 1 patient with an upper motor neuron lesion, whose clinical picture suggested encephalitis of a more focal character, had electrographic findings consistent with such localization (fig. 7). The situation is somewhat different when one considers the patients with no clinical suggestion of encephalitis, half of whom showed abnormalities in the electroencephalogram (table 3).

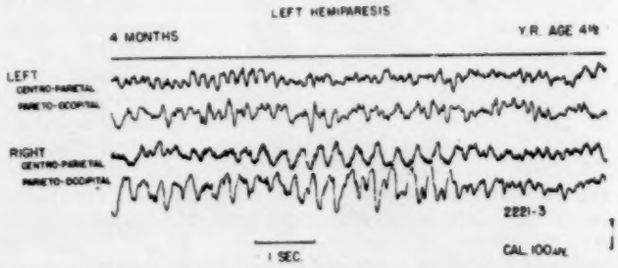

Fig. 7.—Y. R., aged 4½, experienced the onset Sept. 6, 1946, of fever, headache and vomiting. Drowsiness and inability to speak preceded the generalized convulsive seizure on the sixth day, after which he was admitted. He remained semicomatose for three weeks. Slight pleocytosis and a slightly positive Pandy reaction in the cerebrospinal fluid were present. Coarse tremor of right arm, right internal strabismus and generalized lead pipe rigidity were replaced later by a spastic hemiplegia with early establishment of flexion contracture deformities. There were residual irritability and slight impairment of speech fluency.

Yet, in the light of both experimental and pathologic demonstration of more extensive cerebral involvement in poliomyelitis than is suggested by the clinical findings, it is tempting to consider that the electroencephalographic changes demonstrated in poliomyelitis represent cerebral disease.

The correlation between the development of disturbed behavior and abnormal electrical activity following poliomyelitis is high, with 10 out of 11 patients with severe behavior disturbances showing abnormal electrograms (table 4). In the 1942 group, all 3 with behavior disturbances had abnormal electroencephalograms. This suggests that there may well be an organic basis of the nature of a subclinical encephalitis underlying some of the severe forms of behavior problems occurring as sequels to poliomyelitis.

There is no correlation between mild personality disorders and electroencephalographic disturbances (table 4). This finding is compatible with the well

11. Lindsley, D. B., and Cutts, K. K.: Clinical and Electroencephalographic Changes in a Child During Recovery from Encephalitis, Arch. Neurol. & Psychiat. **45**: 156-161 (Jan.) 1941. Ross, J. S.: Electroencephalographic Findings During and After Acute Encephalitis, J. Nerv. & Ment. Dis. **102**: 172-182 (Aug.) 1945.

known complexity of etiologic factors influencing behavior following poliomyelitis. One would not expect to find a close correlation between the electroencephalographic and behavior disorders, since the latter are largely conditioned by environmental situations and the disturbance in cerebral function reflected in the electroencephalogram may not be of a type which affects behavior in this sense.

SUMMARY

Abnormalities in the electroencephalogram were found in a large proportion of patients following poliomyelitis. These changes were much more common in children than in adults. Partial or complete recovery was observed in some patients during a period of five to eight months following the acute illness. In others there was evidence of persistent abnormality in the electroencephalogram for at least five to fifteen years. It is concluded that cerebral involvement in poliomyelitis is much more common as judged by changes in the electroencephalogram than would be apparent from clinical observations alone. The possible significance of these findings in relation to disturbances in mentality or behavior was discussed.

ABSTRACT OF DISCUSSION

Dr. M. G. Peterman, Milwaukee: I am glad that Dr. Goldbloom was cautious in his interpretations of the tracings which he presented. Ever since Heine first described poliomyelitis in 1840 as a definite, distinct clinical entity, investigators of this disease have considered it polioencephalitis rather than simply poliomyelitis; in fact, since Harbeck and Schéel in 1907 described the changes which they considered typical of this disease, namely, involvement of the meninges and the cerebral cortex, we have come to consider the disease as a generalized infection involving the entire nervous system. Electroencephalographers have considered it impossible to obtain satisfactory tracings in patients with fever. It is well that there was in interval between the acute phase of the disease and the tracing. I believe that it is significant that the authors observed the greatest changes in the first week after the onset of the disease and that most of these "changes" disappeared subsequently. I believe that those "changes" were extraneous and not specific. Poliomyelitis is the same disease in adults as it is in children, and Ebaugh could find questionable changes in only 2 of 16 adults. I feel that there have not been any consistent changes demonstrated here which could be attributed to any specific infectious disease. Assuming that all the patients described had definite poliomyelitis in spite of some of their spastic rigidities, spastic hemiparesis, etc., I see no reason why a certain percentage of them could not have had cerebral dysrhythmia before the poliomyelitis as an entirely unrelated phenomenon. The tracings which I have seen this afternoon have not been convincing. I see variations in tracings every day, particularly in children under 10 years of age. The only specific findings shown here are the slow waves, the cerebral dysrhythmia, which is typical of a convulsive disorder. It is difficult to interpret changes such as those described here. The only positive specific changes which we recognize now are those described originally by Berger and further elaborated on and substantiated by the Gibbs in the various types of epilepsy. Hyperventilation for only two or three minutes is usually not sufficient to produce or precipitate the changes desired in children. The patient labeled "T.C." who had an abnormally slow rhythm could very well have had epilepsy, inasmuch as she had a convulsion or a history of convulsions before she had poliomyelitis, and her sibling could very well have had abnormal changes due also to a congenital cerebral dysrhythmia. I agree with Dr. Goldbloom that this is an extremely interesting study, but I should be loath to draw any conclusions on the changes which he has presented.

Dr. David Bodian, Baltimore: Three features of the pathologic picture of poliomyelitis must be clearly understood before one can make a satisfactory correlation of clinical symptoms, abnormal electroencephalograph findings and the pathologic substrate of both. The first is that all the evidence available shows conclusively that every case of poliomyelitis, human or experimental, exhibits lesions of the brain. The second is that in human poliomyelitis, as well as in most experimental cases, some parts of the brain rarely, if ever, are affected. These include primarily the entire cerebral cortex except for the motor areas, the corpus striatum, except for the globus pallidus, and the cerebellar cortex except for the vermis; in other words, the brain stem as far forward as the hypothalamus and thalamus bears the brunt of the cerebral pathologic changes in poliomyelitis. The third important generality is that great variation occurs in the severity of the pathologic involvement of most centers of the central nervous system, but the same centers are generally involved in greater or lesser degree in almost all cases. It is interesting that pathologic studies and electroencephalographic studies seem to agree in suggesting the brain stem as the primary source of electroencephalographic abnormalities. For example, the paper under discussion suggests a tendency for patients with involvement of the cranial nerve to have a higher incidence of electroencephalographic abnormality than patients with spinal or nonparalytic involvement. Our cases show a definite correlation of severe involvement of the cranial nerve with severe involvement of other brain stem centers, but not with unusual cortical abnormality. I am not competent to judge critically the evidence from the electroencephalograph regarding the organic basis of personality changes in poliomyelitis. Such changes can hardly be the result of damage to the cerebral cortex, since lesions are conspicuously absent from most of the cortex. Severe lesions are present, however, in the hypothalamus and thalamus in some of our cases, and in these cases general involvement of the brain stem is severe. If injury to these centers can contribute to emotional disturbances, then perhaps one can account for a correlation of electroencephalographic abnormality with severe behavior disturbances. I am glad to note, however, that the authors point out that complex factors must influence any behavior changes which follow poliomyelitis infection. Although the younger age group in general showed a tendency toward greater intensity of pathologic reaction in the brain stem, I am not inclined to attribute great significance to such a finding in our relatively small series of cases.

Dr. J. A. Toomey, Cleveland: In 1925 we demonstrated (Toomey, J. A. and Lipson, H. A., Poliomyelitis: Report of a Case, *Am. J. Dis. Child.*, 41:1389, 1931) that severe pathologic changes, present in this disease at times, often bore no parallel relation to the symptoms exhibited. Notwithstanding massive destruction and that but a few of the anterior horn nerve cells were present and that gliosis was found at autopsy, during life the use of the muscles of both arms and legs was only slightly modified in the left gastrocnemius in this case. This was the first demonstration in the human being, to my knowledge, that extensive pathologic changes may be unaccompanied by clinical symptoms and, occurring as it did in a patient who recovered from poliomyelitis but who died from another disease but a short time afterward, it presented irrefutable evidence as to the truth of this assertion. The motor function may not be impaired—the muscles may even perhaps be hyperactive—and the patient merely show signs of encephalitis, though it is more common for him to have encephalitis together with weak or paralyzed muscles. Encephalitis unaccompanied by complicating involvements of the bulb or other part of brain or cord occurs. I have even seen proven cases of involvement of basal nuclei with subsequent recovery from this disease. I have had many patients with complicating encephalitic signs, but in over twenty-five years of experience with this disease I have never seen any modification of the higher faculties should the patient recover. Were he normal in intelligence before, he was that afterward; if a moron before, a moron afterward. I do not doubt that electroencephalographic changes occur; they occur with any infectious disease. Such personality changes that occur—and they do occur, as the speaker states—were the results of the patient's psychic reaction to crippling disabilities, and to environmental difficulties. Although the significance of electroencephalographic changes must be interpreted with caution, and that some form of encephalopathy might have existed prior to the

disease, as the authors state, it would be stretching a point to conclude that all these patients had some prior trouble. I would agree with the reasoning of the essayists and would also be tempted to consider the electroencephalographic changes evidence of cerebral disease, but I still wonder whether the postdisease behavior problems are due to things other than cerebritis. I do not see how one can tell without further study and data. The variance between young and old is intriguing.

DR. MEYER A. PERLSTEIN, Chicago: In the interpretation of electroencephalograms in children there are many pitfalls to be avoided. One does see "abnormal" patterns (i.e., as compared to adult patterns) more frequently in children; in other words, the abnormal for adults is normal for children, and the younger the child, the more "abnormal" appearing its normal electroencephalographic patterns are. Of course, Dr. Goldbloom has fortified himself with an experienced electroencephalographer, so that we cannot criticize the interpretations of the tracings shown. Apparently the controls are the patients themselves. And if it is a fact that the waves and rhythms classified as "abnormal" by Dr. Goldbloom disappeared after four, five or six or eight months, then we might assume that they probably were normal before the onset of the disease. However, since such transitory abnormalities in the electroencephalogram may follow any generalized infection, it is questionable that there is anything specific about the changes following poliomyelitis. It is also doubtful that the behavior disturbance can be due to anything organic, because if it were so one would expect to get more such disturbances in bulbar forms or involvements of the cranial nerve than in the spinal forms. To the contrary, I have seen the greatest disturbance in behavior where the crippling was greatest. In other words, it was definitely functional, secondary to the degree of motor disability and not to the site of lesion. Likewise, one might say that the obesity that often occurs in these children following the disease might be on an organic encephalitic basis. However, here too the obesity seems to occur primarily in those who have involvement in the legs and cannot get around and not in those who have had bulbar or upper extremity involvement. We have done electroencephalograms in 15 of our last series of cases of poliomyelitis, and these were done and interpreted by Dr. Gibbs in Chicago. We found that all of our cases showed normal electroencephalograms except 1. This happened to be in a child aged 15, who showed a paroxysmal pattern typical of petit mal. These abnormalities were not most prominent in the occipital region, as has been described here today. We feel that this child had petit mal which was clinically not evident, but in no way related to her poliomyelitis. The fact that we do not find electroencephalographic abnormalities following poliomyelitis and that Dr. Goldbloom does find them does not necessarily mean that we are in disagreement. It may only signify that there may be different types of epidemics and that in some epidemics there may be more involvement of the cortical areas, or of the subcortical areas, which may involve by their connections the patterns in the cortical area.

DR. ALTON GOLDBLOOM, Montreal, Canada: It is unfortunate, perhaps, that Dr. Jasper and other members of his staff are not here to discuss the criticisms with reference to the interpretation of the electroencephalograms. I can only say that these interpretations were made not only by Dr. Jasper but were independently made, and critically, in accordance with the most severe criteria, by other members of his staff, who came to identical conclusions with reference to their interpretations. It is our intention to continue further investigation to see whether this is a constant phenomenon in poliomyelitis, to see whether it is merely a phenomenon of this particular epidemic, as Dr. Perlstein suggested, and which we considered, and to see whether again in a larger number, as large a number of patients as we can accumulate, there are more easily discoverable changes in behavior which perhaps can be attributed to changes in cerebral pathology as a result of the disease.

TEMPORAL ARTERITIS

Relief of Headache by Injection of Procaine Hydrochoride

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and
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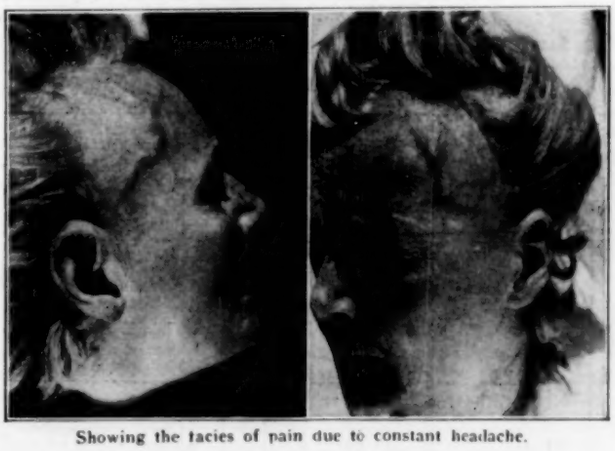
Temporal arteritis [1] is a condition poorly understood, with an unknown etiology, a variable course and an unsatisfactory treatment. The term is a misnomer in that it is now believed to be part of a generalized cranial arteritis.[2] Severe headache is one of the most serious manifestations and often requires opiates for relief for a longer period of time than is desirable. Relief has occurred in many instances following the removal of a segment of the artery, done primarily to obtain a biopsy specimen. Hoyt [3] said, "From a practical standpoint, the most effective treatment seems to be the removal of a segment of the temporal artery." It was felt that this was due to interruption of the periarterial sensory pain fibers and suggested to one of us (A. M. R.) the use of a procaine hydrochloride block of the sympathetic nerve fibers passing along the vessels. The result in 4 instances has been immediate and striking in the relief of pain. Inasmuch as the pain in many instances is prolonged for many weeks or months (the figure), a simple means for relief of the pain is gratifying.



Showing the facies of pain due to constant headache.

REPORT OF CASES

CASE 1.—Mrs. H. L. B., aged 59, was first seen Oct. 21, 1941 in the office. She had been sick for three weeks with an illness diagnosed as "flu." A headache first developed over the top of the head, but in the last week it had become localized on the right side. She lost her appetite and felt tired. The blood pressure was 130 systolic and 80 diastolic; the blood hemoglobin 9.1 Gm. per hundred cubic centimeters; erythrocytes 5,400,000, and leukocytes 8,350, with a normal differential count. Urinalysis (uncatheterized) revealed 8 to 10 pus cells and a few erythrocytes. Her sinuses were examined and considered irrelevant as a cause for her headache. An electrocardiogram revealed left axis deviation but no other significant findings. A week later, October 28, she complained of a constant right-sided headache which never entirely disappeared. She became progressively weaker and was forced to stay in bed. She lost her appetite, lost weight, and complained bitterly of the constant headache, now bilateral but worse on the right side. She took 1 grain (60 mg.) of

† Dr. Roberts died in April 1947.

From the Medical Department of the Medical School of the University of Southern California.

1. Horton, B. T.; Magath, T. B., and Brown, G. E.: An Undescribed Form of Arteritis of the Temporal Vessels, Proc. Staff Meet., Mayo Clin. **7**: 700, 1932.
2. Chasnoff, J., and Vorsimer, J. J.: Temporal Arteritis: A Local Manifestation of a Systemic Disease, Ann. Int. Med. **20**:327, 1944.
3. Hoyt, L. H.; Perera, G. A., and Kauver, A. J.: Temporal Arteritis, New England J. Med. **225**: 283, 1941.

codeine several times daily for only partial relief. About November 15, the true nature of the condition was suspected. Both temporal arteries were found to be firm cords with exquisite tenderness. One to 2 cc. of procaine hydrochloride was injected around the right temporal artery. This produced relief within two or three minutes. She said that this gave the only relief from the headache that she had had since it began. After the injection, the arteries became soft to the touch, apparently due to prompt vasodilation. The subjective improvement was remarkable. The relief was complete until the following day, when there was a slight return of pain. Injection was made several times with almost complete relief of the surface pain. Injections were also made over the occipital arteries, where there were two points of tenderness. Some headache persisted, however, but not the severe surface headaches which she had had. She described it as a deep intracranial headache not as severe as the peripheral pain but

Four Instances of Temporal Arteritis Relieved by Injections of Procaine Hydrochloride

Case	Age	Condition Before	Fever	Arteries Involved					Treatment and Outcome
				Temporal	Occipital	Orbital	Supraorbital	Intracranial	
1	59	Virus infection	+	+	+	0	0	+	Arteritis 6 weeks after onset of fever; 4 periarterial and 2 stellate ganglion injections of 1% procaine gave complete relief
2	25	Acute infection of respiratory tract	0	+	0	0	0	0	Arteritis 4 weeks after headache; complete relief from one periarterial injection of 1% procaine hydrochloride
3	66	Acute infection of respiratory tract	+	+	+	0	0	0	Arteritis 8 weeks after fever; periarterial injection of 1% procaine hydrochloride gave complete relief; recurrence, re-injection, relief
4	75	Acute infection of respiratory tract	+	+	+	0	0	0	Negro; temporal swelling, tenderness for 3 months; complete lasting relief after 3 daily periarterial injections of 1% procaine hydrochloride

persistent and annoying. On December 12 she was admitted to St. Vincent's Hospital. It was thought that injection of the stellate ganglion might produce vasodilation of any intracerebral arteries which were vasospastic and possibly relieve the headache as had the injection around the temporal arteries. The blood on admission showed 11.6 Gm. of hemoglobin and 3,058,000 erythrocytes. On December 13, 20 cc. of 1 per cent "intracaine" (B-diethylaminoethyl-p-ethoxybenzoate hydrochloride) was injected into the vicinity of the stellate ganglion. Moderate Horner's syndrome was obtained with complete relief of the headache. There was some return in a few days and the injection was repeated. She left the hospital December 21, feeling much better, and since then she has had no return of the headache.

Case 2.—Mrs. W. P., aged 25, was first seen at the office March 3, 1942 complaining of a unilateral temporal headache. Her mother had had migraine headaches. The headache had developed February 20 and had followed an attack of severe sore throat diagnosed as acute laryngitis by a physician. She stayed in bed a week, was extremely nervous and said that the headaches were "terrible." The scalp was sore and the headache was always on the right side. She had had one-sided headaches since early youth and, because her mother had a history of sick headache, the diagnosis on the first visit was that of migraine. Temporal arteritis was not suspected. She was given tablets of codeine compound on March 18. She said that her headaches were slightly relieved for about two hours after taking the tablets but that they remained continuous. On March 24, over one month after the onset of the headache, there was found "definite localized tenderness over the right temporal artery." The headache was continuous unless she took the pills every two hours. The tissue around the temporal artery was injected with 1 per cent procaine hydrochloride. Following the injection, there was noticeable relaxation of the artery to the touch and loss of tenderness. Before the injection, the artery could be felt as a firm cord without overlying changes in the color of the skin. There was immediate relief of the headache after the injection. On March 26, the headache had not returned. It was the first relief that she had had since February 20, and the tenderness was gone over the temporal artery. On March 31, she reported no further headache. She had had it continuously from the time she awakened until she fell asleep prior to this relief. She was apparently relieved completely of her headache after one injection. The nausea and loss of appetite that she had had at the time of the headache were gone. She has had no further trouble.

Case 3.—Mr. J. M. M., aged 66, was first seen May 4, 1942 complaining of sharp pain in his forehead and the temples which had developed a month before. Two weeks prior to the development of the headache, he had had a virus bronchitis with general weakness, cough and fever, from which he recovered slowly. Physical examination showed a blood pressure of 106 systolic and 64 diastolic, and a pulse rate of 66. He appeared anemic and the pharynx was slightly inflamed. The blood count showed 9.4 Gm. of hemoglobin, 3,600,000 erythrocytes and 11,250 leukocytes with a normal differential count. Acute temporal arteritis was not suspected. He was given ½ grain (30 mg.) of codeine for the headache. He continued to lose weight and the headache persisted. On May 18, 1943 he was admitted to St. Vincent's Hospital. On May 19, the true condition was suspected. A note then read, "The patient had had a bilateral temporal headache for several months with a dull pulsating pain, at times sharp and stabbing. Examination reveals hard, apparently spastic, temporal arteries with localized tenderness."

A diagnosis of cranial arteritis was made. Injection of both periarterial areas relieved the headache markedly. The patient said it was "like lifting a ton off of my head." That night he slept well for the first time in weeks. The next morning there was only a residual ache, not the throbbing pain. The temporal arteries were not tender and were relaxed. By May 24 the tenderness was all gone. On May 26 there was no return of the temporal headache, but he now complained of tenderness in the left occipital area. An area there was felt pulsating and tender and was injected with 2 cc. of 1 per cent procaine hydrochloride with complete relief. On May 29, there was slight return of tenderness at the left temporal artery. One cubic centimeter of procaine hydrochloride was again injected with immediate relief. It was necessary to make injections over the temporal arteries twice more. Each recurrence of headache was much less severe, however, and was immediately relieved by the injection.

Case 4.—Mrs. A. G., aged 75, a Negro, was admitted to the hospital May 12, 1942, complaining of severe, sharp, shooting pains in the head for three months. Three months before she had had a severe cold with rhinitis and bronchitis. Three weeks later, pain and swelling developed in both temporal areas. On admission, her temperature was 100 F., her pulse rate 100 and her blood pressure 160 systolic and 95 diastolic. On examination, there was swelling in both temples, which were tender, pulsating and nodular. A harsh rasping apical systolic murmur was audible. On May 15, three days after admission, 1 per cent solution of procaine hydrochloride was injected around both temporal arteries with pronounced relief. There was slight return of tenderness and pain, so the following two days procaine hydrochloride was injected over both temporal arteries. Because of the tender left occipital artery, on May 17 an injection was also made on the left side. There was complete relief of her headache. On May 22, a genitourinary infection developed for which sulfadiazine was administered;

this relieved her in a few days. On June 2 all evidence of the arteritis was gone. There was no swelling or tenderness. On June 29 she was dismissed.

COMMENT

The immediate relief of the headache by the injection, with a simultaneous change from hardened, tortuous vessels to soft relaxed ones, suggests an acute vasospastic condition. The occurrence of the condition in a woman aged 25 suggests this etiology rather than that it is a concomitant feature of degenerative arterial changes, the usual belief.

Meyers and Lord [4] recently reported the condition in a woman aged 22 years. The development of the arteritis in these 4 instances following acute infections is also evidence of an infectious origin. Although relief of the headache can be obtained by removal of a segment or excision of the artery, there often is multiple involvement of cranial arteries, obviating such treatment. Multiple injections of procaine hydrochloride, however, are feasible and simple.

SUMMARY

Four instances of cranial arteritis involving chiefly the temporal arteries are described. The headaches were gratifyingly relieved by periarterial injections of procaine hydrachloride. This simple procedure is recommended for control of the pain.

ADDENDUM

Since this article was prepared, an article by Dr. S.B. Nadler entitled "Paroxysmal Temporal Headache", which appeared in the September 29, 1945 issue of THE JOURNAL, has been called to our attention. He obtained relief in paroxysmal temporal headaches of the type relieved by pressure over the temporal artery by injecting procaine hydrochloride. This condition is of course different from temporal arteritis. Relief by procaine was considered an indication for ligation and section of the affected temporal artery. In a letter to THE JOURNAL, December 8, 1945, Dr. D.F. Newman of West Palm Beach reported relief by injection alone. Injection of procaine therefore appears to be of value in several types of headaches.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following statement.

AUSTIN SMITH, M.D., *Secretary.*

"TEROPTERIN" AND "DIOPTERIN" IN THE TREATMENT OF CANCER

Recent newspaper and periodical publicity regarding "teropterin" stemming from a report by Farber and his co-workers [1] has again raised the hopes of many sufferers from cancer that a "cure" for this disease has been found. Because of the inquiries received by the Council on Pharmacy and Chemistry, the existing evidence regarding the actions of "teropterin" and an allied derivative, "diopterin" is here reviewed.

Chemically, both "teropterin" and "diopterin" are closely related to folic acid (pteroylmonoglutamic acid); "teropterin" is pteroyltriglumatic acid, and "diopterin" is pteroyldiglutamic acid. Leuchtenberger and his associates [2] observed that "folic acid concentrate" and crystalline Lactobacillus casei factor inhibited tumor growth in mice with transplanted sarcoma 180. In another publication [3] these authors reported inhibition of spontaneous mammary cancer in mice with folic acid.

Farber and his co-workers [1] published the first clinical report on the use of "teropterin" and "diopterin" in the treatment of human cancer. They administered these preparations to 90 patients with terminal cancer and noted in some instances a subjective feeling of improvement on the part of the patients and a diminution in pain. No definite beneficial action on the tumors was reported. The authors were chiefly concerned with reporting lack of toxicity due to the drug and noting the subjective effects.

Klainer [4] has reported a case of metastatic adenocarcinoma of the breast treated with "teropterin," but he stated that the reported improvement in the metastatic lesions could not be ascribed to "teropterin," because the patient was also subjected to oophorectomy and injections of testosterone propionate, both of which are known to produce favorable effects on such metastatic lesions.

Lehv, Wright, Weintraub and Arons [5] have described the results of administration of "teropterin" to 20 patients with cancer. These patients were treated for from one to three months with "teropterin" exclusively. Of the objective changes observed, the only one of significance was the tendency to reduction of abnormally high alkaline and acid phosphatase values. Subjectively, relief from pain was observed in most of the patients, and in several instances opiates could be reduced or eliminated entirely. The patients reported a sense of well-being and a state of mental alertness. Five of the patients had died at the time the report was prepared. No objective changes in the malignant lesions were reported.

Meyer [6] has reported that in 7 patients with chronic lymphocytic leukemia, 2 with chronic myeloid leukemia, 2 with multiple myeloma and 1 with acute lymphoblastic leukemia treated for four to ten weeks with "teropterin," no alteration in the blood picture was noted, although some relief from pain and better appetite were recorded.

News stories which have appeared have hinted at possibilities far beyond those set forth in the recorded observations of these investigators. Since it appeared that not all of the available information had yet been published, the manufacturer of these folic acid derivatives was asked if he had information which could be made available to the Council for review. The firm furnished such information, and part of this report is based on data so obtained.

Both "diopterin" and "teropterin" were distributed to at least two hundred and twenty-five investigators, many of whom have reported on only 1 or 2 cases. Data on 154 patients treated with "teropterin" and on 121 patients treated with "teropterin" and "diopterin" which have been furnished the Council form the basis of this report. Since, on the basis of the present available data, there is no significant difference in the

1. Farber, S.; Cutler, E. C.; Hawkins, J. W.; Harrison, J. H.; Peirce, E. C., and Lenz, G. G.: Science, 106:619 1947.

2. Leuchtenberger, C.; Lewisohn, R.; Laszlo, D., and Leuchtenberger, R.: Proc. Soc. Exper. Biol. & Med., 55:204, 1944.

3. Leuchtenberger, R.; Leuchtenberger, C.; Laszlo, D., and Lewisohn, R.: Science, 101:46, 1945.

4. Klainer, M. J.: Tr. New York Acad. Sc., 10:71, 1948.

5. Lehv, S. P., Wright, L. T.; Weintraub, S., and Arons, O.: Tr. New York Acad. Sc., 10:75, 1948.

6. Meyer, L. M.: Tr. New York Acad. Sc., 10:99, 1948.

results of "teropterin" medication as compared with "diopterin" medication, the results will be combined in this report. It is stated that in 31.6 per cent (87 cases) general objective improvement was noted by the attending physician. Unfortunately, many physicians did not record what constituted "general objective improvement" and it is possible that some of this may have been wishful thinking, particularly in view of the fact that several of the patients reported to have "general objective improvement" died within a few weeks.

Certain objective changes in the patient's condition were reported, however, and among these were changes in appetite, weight and anemia. Improved appetite was seen in 31 per cent of the patients, gain in weight in 14.5 per cent, loss of weight in 30.9 per cent, improvement in anemia in 5.1 per cent and increased anemia in 4.7 per cent. It would not be surprising to see some correction of anemia in view of the close relationship of these compounds to folic acid. That more patients failed to improve may be due to two factors: severity of the disease and short duration of medication. The improvement in appetite may, in many instances, be due to psychic suggestion and may be more apparent than real, as suggested by the fact that far fewer patients showed a measurable gain in weight. It should be remembered, however, that many patients with cancer have prodigious appetites but fail to gain weight.

Emphasis has been laid on the reported analgesic action of "diopterin" and "teropterin." If these drugs have a significant analgesic action, much of the reported subjective improvement in patients may be attributable to this effect; of the patients in whom pain was a significant factor, 38 per cent obtained some relief. In this connection, "teropterin" appeared to be significantly superior to "diopterin," since approximately 50 per cent of those receiving "teropterin" reported relief from pain as against 23 per cent receiving "diopterin." Some of the reported relief may have been of psychic origin, but there is little doubt that much of it was real since many of the patients receiving opiates were maintained comfortably on greatly reduced dosage or with complete withdrawal of other analgesic medication. It should be pointed out, however, that relief from pain in 50 per cent of the patients is far inferior to the percentage of relief seen following the administration of adequate doses of the opiates alone or in conjunction with other potent analgesics. On the other hand, "teropterin" may offer advantages because of the absence of side reactions and lack of hypnotic or sedative effects.

Of greatest interest are the reported actions of these compounds on the tumors and their metastases. Of significance, therefore, is the observation that in 81.1 per cent of the patients, no change was noted in either the primary tumor or the metastatic lesions. In 13.1 per cent, regression of the lesions was reported. However, it should be noted that many of these patients were receiving or had received other forms of therapy such as roentgen rays or radium, and it is not possible to attribute the regression to the drug. In other cases, the criteria for determining regression were not stated, or the location of the lesions did not permit an accurate estimation of changes in size. In the few cases which have come to autopsy, no significant effects on the tumor which could be attributed to the drug have been noted.

It is perhaps too early to conclude that either "teropterin" or "diopterin" has an action or, on the other hand, is ineffective in cancer. Too few cases have been observed, and the study period has seldom been more than a few months, the majority of those on whom information is available receiving less than eight weeks' treatment and observation. Certainly, no critical appraisal of the effects of an agent in cancer can be made in such a brief period; five years is the usually accepted required period of observation.

In view of the lack of conclusive evidence contained in the data reported to date with these compounds, the Council believes it advisable to emphasize again the need for carefully examining publicity on the results of medical research that has been written for public interest and thus designed to have news appeal. In the minds of many physicians as well as members of the general public the impression has been created that "teropterin" has been shown to have a definite anticarcinogenic effect. The facts available do not yet support this view; even if the actions of the drug had been proved to be more dramatic than those reported here, much more critical investigative work would seem necessary before hope for a new lead to a cure can be raised.

The Council also believes that some consideration should be given to the manner in which new agents believed to be useful in the treatment of cancer are investigated. The indiscriminate distribution of such drugs to physicians regardless of the facilities with which they have to work and their competence in the particular field under investigation actually retards scientific progress, is wasteful of material and is not productive of valuable information. The investigation of new remedies should be entrusted to those who are competent by training and experience to conduct critical clinical trials, who have facilities adequate to study the patients receiving the preparation and who will, in a reasonable time, treat sufficient numbers from which statistically valid data may be obtained. Frequently, a manufacturer who is still studying the possibilities of a new drug is besieged with requests for it when the first favorable report appears. This creates an awkward situation: The manufacturer may not wish to risk offending the inquiring physician by refusing the drug, but he knows that if the product fails to elicit the desired response he may be blamed; and yet he is also blamed if he refuses the drug. The only solution is for the medical profession to wait until the product has been proved safe and efficacious and for the manufacturer to stand steadfast in his refusal to give it to any but qualified investigators. In the meantime, the manufacturer has been distributing pamphlets by mail and at exhibits in medical, hospital and nurses' conventions.

The Therapeutic Trials Committee has as one of its functions the arrangement of clinical trials of new agents. The work of this Committee in organizing a collaborative study on androgens and estrogens in mammary cancer already is setting a pattern for investigations of this type. Such investigations, while time consuming, are not as time consuming as piecemeal investigation, and, furthermore, are so exhaustive because of collaboration by experts that the problems and solutions are clearly defined at the end of the investigation.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

CETYL PYRIDINIUM CHLORIDE.—Ceepryn-Merrell.—The monohydrate of the quaternary salt of pyridine and cetyl chloride.—$C_{21}H_{38}ClNO$. M. W. 357.99.

Actions and Uses.—Cetyl pyridinium chloride, a quaternary ammonium salt, is a cationic detergent that possesses useful surface active as well as antiseptic properties. It is employed in aqueous solution or tincture in appropriate dilutions for topical application in the preoperative disinfection of the intact skin and the prophylactic antisepsis of superficial minor wounds. It is also useful by topical application or irrigation for therapeutic disinfection of accessible mucous membranes and more extensive wounds or infections of the underlying tissues. It may also be used to preserve sterility of instruments during storage.

Cetyl pyridinium chloride is subject to the shortcomings of other cationic detergents employed as germicides in that its action is opposed by anionic detergents such as ordinary soap, may be reduced in the presence of serum and tissue fluids and is not reliable against clostridial spores.

Dosage.—For preoperative preparation of the intact skin, a 1:100 aqueous solution may be used alone for scrubbing for a period of five to ten minutes; when the conventional soap-alcohol-ether-germicide method is to be employed, 1:500 or 1:1,000 tincture dilutions may be used as the germicide if soap is thoroughly removed before application. Similar dilutions of the tincture or a 1:1,000 aqueous solution may be used for topical application to minor lacerations and abrasions. For disinfection of delicate mucous membranes or extensive areas of exposed tissue, from 1:5,000 to 1:10,000 solutions should be used.

Tests and Standards.—

Cetyl pyridinium chloride occurs as a white powder possessing a slight odor. It melts within the range 77 to 83 C. It is very soluble in water, alcohol and chloroform and only slightly soluble in benzene and ether. The *pH* of a 1 per cent aqueous solution is 6 to 7 as determined by the use of indicators (glass electrode instruments give variable results). The surface tension at 25 C. of a 0.1 per cent aqueous solution is about a 1 per cent aqueous solution, about 41.40; and a 10 per cent aqueous solution, 38.15

Dissolve 0.1 Gm. of cetyl pyridinium chloride in 50 cc. of water. Add 1 cc. of silver nitrate solution to a 5 cc. portion of the solution: a white precipitate forms, which is soluble in strong ammonia solution.

Heat gently about 0.25 Gm. of cetyl pyridinium chloride contained in a test tube until the substance melts and a brown color develops: the odor of pyridine is readily detected.

Add 5 cc. of about one hundredth molar potassium ferricyanide to 5 cc. of the cetyl pyridinium chloride solution: a yellow precipitate forms. Add 1 cc. of a saturated potassium thiocyanate solution to a 1 cc. portion of the cetyl pyridinium chloride solution: a white gelatinous precipitate forms. Add 1 cc. of saturated picric acid solution to 1 cc. of the cetyl pyridinium chloride solution: a yellow precipitate forms.

Weigh, accurately, about 0.5 Gm. of cetyl pyridinium chloride. Dry to constant weight in a vacuum over phosphorous pentoxide: the loss in weight is not less than 4.5 per cent and not more than 5.5 per cent. Ash the dried sample: the weight of the residue is not more than 0.2 per cent.

Weigh, accurately, about 0.25 Gm. of cetyl pyridinium chloride. Transfer to a 100 cc. volumetric flask. Add 5 cc. of buffer solution (260 Gm. of sodium acetate and 250 cc. of 36 per cent acetic acid, mixed with water to make 1 liter). Add 50 cc. of one hundredth molar potassium ferricyanide. Dilute to the mark with water, mix, allow to stand one hour and filter, discarding the first 15 cc. of the filtrate. Add 5 cc. of 10 per cent potassium iodide solution to a 50 cc. aliquot of the filtrate in an iodine flask. Add 10 cc. of hydrochloric acid and allow to stand for one minute. Add 10 cc. of 10 per cent zinc sulfate solution and titrate with one hundredth normal sodium thiosulfate, using starch T.S. near the end of the titration. Each 1 cc. of one hundredth normal sodium thiosulfate is equivalent to 0.01074 Gm. of cetyl pyridinium chloride monohydrate: the cetyl pyridinium chloride monohydrate content is not less than 97 per cent or more than 103 per cent.

WM. S. MERRELL CO., CINCINNATI

Solution Ceepryn 10 per Cent Concentrated: 180 cc. and 3.84 liter bottles. An aqueous solution containing 10 Gm. per hundred cubic centimeters of cetyl pyridinium chloride and 8 Gm. per hundred cubic centimeters of monobasic sodium phosphate for the preparation of solutions and tinctures for external use.

Tincture Ceepryn 1:200 (Tinted): 120 cc., 480 cc. and 3.84 liter bottles. Contains 0.5 per cent of cetyl pyridinium chloride in a tincture medium of 50 per cent ethyl alcohol by volume and 10 per cent acetone by volume.

Tincture Ceepryn 1:500 (Tinted or Untinted): 120 cc., 480 cc. and 3.84 liter bottles. Contains 0.2 per cent of cetyl pyridinium chloride in a tincture medium of 50 per cent ethyl alcohol by volume and 10 per cent acetone by volume.

Tincture Ceepryn 1:1,000 (Tinted): 120 cc., 480 cc. and 3.84 liter bottles. Contains 0.1 per cent cetyl pyridinium chloride in a tincture medium of 50 per cent ethyl alcohol by volume and 10 per cent acetone by volume.

Solution Ceepryn 1:1,000 (Isotonic): 480 cc. and 3.84 liter bottles. Contains 0.1 per cent cetyl pyridinium chloride in distilled water made isotonic by addition of 0.26 Gm. of monobasic sodium phosphate and 1.43 Gm. of disodium phosphate per hundred cubic centimeters.

U. S. patent 2,295,504. U. S. trademark 398,185.

AMINOPHYLLINE—U.S.P. (See New and Nonofficial Remedies 1947, p. 305).

The following dosage forms have been accepted:

S. E. MASSENGILL COMPANY, BRISTOL, TENN.

Tablets Aminophylline: 0.1 Gm. and 0.19 Gm.

KREMERS-URBAN CO., MILWAUKEE.

Tablets Aminophylline. 0.1 Gm. and 0.2 Gm.

Solution Aminophylline with Benzyl Alcohol 2 per cent: 0.24 Gm. 10 cc. ampuls; 0.48 Gm. 2 cc. and 20 cc. ampuls.

PENICILLIN (See New and Nonofficial Remedies 1947, p. 144).

The following dosage forms have been accepted:

BRISTOL LABORATORIES, INC., NEW YORK.

Crystalline Penicillin G Sodium in Oil and Wax (*Free Flowing*): 300,000 units per cc. suspended in peanut oil containing 4.8 per cent (W/V) white wax U.S.P., 1 cc. cartridges and 10 cc. vials.

LEDERLE LABORATORIES DIVISION, PEARL RIVER, N. Y.

Crystalline Penicillin G Sodium (*Buffered*): 100,000, 200,000 and 500,000 unit vials with sodium citrate U.S.P. as a buffer.

COMMERCIAL SOLVENTS CORPORATION, NEW YORK.

Crystalline Penicillin G Potassium: 1,000,000 units, 50 cc. vials.

Crystaline Penicillin G Potassium in Oil and Wax (*Free Flowing*): 300,000 units per cc., 10 cc. vials.

E. R. SQUIBB & SONS, NEW YORK.

Troches Penicillin Calcium: 5000 units.

RIBOFLAVIN (See New and Nonofficial Remedies 1947, p. 511).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI.

Tablets Riboflavin: 5 mg.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies 1947, p. 347).

The following additional dosage form has been accepted:

E. S. MILLER LABORATORIES, INC., LOS ANGELES.

Solution Diethylstilbestrol in Oil with Benzocaine 2 per cent: 0.5 mg. per cc., in sesame oil with Benzocaine 2 per cent, 1 cc. ampuls. Preserved with cresol 0.5 per cent

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SATURDAY, JUNE 19, 1948

EDITORIAL ANNOUNCEMENT

The absence of the compositors from their work continues. This issue of THE JOURNAL has been prepared in part by the use of Vari-Typer machines.

ROLE OF DIETARY PROTEIN IN FORMATION OF HEMOGLOBIN

Until recently the fact that an adequate dietary intake of protein is essential for normal formation of hemoglobin has been assumed without definite proof. The basis for such an assumption is, of course, the fact that hemoglobin is a protein and hence must be ultimately derived from the protein of the diet. This logical conclusion has been established with some difficulty, however, because of the interconvertibility of the various body proteins and because formation of hemoglobin has a "high priority" for any protein available for metabolism. Rather prolonged and drastic dietary restriction of protein is therefore necessary before formation of hemoglobin is decreased and a demonstrable anemia results. This fact has been clearly demonstrated by Whipple and his collaborators[1] in the dog and by several investigators in the rat.[2] As an extension of this thesis Wayne University investigators[3] have obtained evidence that not only the quantity but also the quality of dietary protein affects formation of hemoglobin. The feeding of a protein deficient in one of the essential amino acids, isoleucine, for example, resulted in the development of a mild chronic anemia, whereas the feeding of the same amount of a protein, lactalbumin, containing adequate quantities of all the eseential amino acids supported normal hemopoiesis. Furthermore, regeneration of hemoglobin after hemorrhage was much less active in animals fed the qualitatively deficient protein than in animals fed lactalbumin. Supporting evidence has been obtained by other investigators, who have shown that a dietary deficiency of certain other essential amino acids, including lysine and tryptophane, limits formation of hemoglobin in the rat. This convincing array of experimental evidence led to the conclusion[3] that "a combination of amino acids in as yet undertermined proportions is needed for the synthesis of the hemoglobin molecule" and to the emphasis on "both the quality and quantity of dietary protein for hemopoiesis."

The essential role of dietary protein in the synthesis of the porphyric portion of the hemoglobin molecule has lately been demonstrated. Isotopically labeled nitrogen of glycine, administered orally to human subjects, appears in the hemin prepared from the subject's red blood cells,[4] and the feeding of a diet low in protein to rats decreases formation of porphyrin as manifest by a decrease in the fecal excretion of protoporphyrin.[5]

Recent studies indicate that the experimental observations cited have practical clinical applications. Following blood loss in human subjects, regeneration of hemoglobin is more rapid if the diet contains generous amounts of protein.[6] Currently, Wintrobe and his co-workers[7] have suggested that the anemia of infection may result from the lack of protein for hemoglobin formation due to the negative nitrogen balance found in this condition.

INTRAVENOUS NUTRITION

The parental administration of nutrients has proved of vital importance in medicine. Dextrose, salt and water given intravenously have long been a dependable device for providing fluid, electrolyte and energy; to this mixture more recently proteins or protein derivatives such as casein digests or mixtures of amino acids have been added, thus amplifying the adequency of the nutrition. In peritoneal lavage, solutions resembling the electrolyte pattern of blood are injected into the

1. Hahn, P.F., and Whipple, G.J.: J. Exper. Med. 69:315, 1939.
2. Orten, A.U., and Orten, J.M.: J. Nutrition 26: 21 1943. Metcoff, J., Favour, C.B., and Stare, F.J.: J. Clin. Investigation 24: 92, 1945.
3. Orten, J.M., and Orten, A.U.: J. Nutrition 30:137. 1945; 31:765, 1946.
4. Shemin, D., and Rittenberg, D.: J. Biol. Chem. 159: 567, 1945.
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6. Leverton, R. M., McMillan, T. J., and Peters, M.: J. Am. Dietet. A. 20: 747, 1944.
7. Greenberg, G.R., and others: J. Clin. Investigation 26:121, 1947.

body cavity. Preparations of its fat-soluble vitamins are available for intramuscular injection, though their utilization by this route is less complete than when given orally. Currently, one of the drawbacks of intravenous alimentation is the inability to supply the required calories; the addition of fat to the infusion mixture would tend to remedy this deficiency.

Studies have been reported recently indicating the satisfactory use of fat for intravenous alimentation in experimental animals. Refined coconut oil emulsions stabilized with purified phospholipids from soybeans[1] were prepared by using a high pressure homogenizer; all the lipid particles were less than 2 microns in diameter, and most of them were beyond the resolving power of the light microscope.[2] Furthermore, these preparations were unchanged during autoclaving. They were injected intravenously into dogs in amounts approaching the usual oral intake of fats. The 30 per cent emulsion supplied approximately 3 calories per cubic centimeter of preparation and was as well tolerated as was the 15 per cent emulsion used earlier.[3] The plasma fat showed a definite increase to approximately twice the normal value during the intravenous administration.[3] With the cessation of injection there was a prompt fall in the plasma fat to pretreatment level within one hour, indicating that the lipid rapidly left the circulation. The granulomatous lesions in the lungs observed in the early experiments were eliminated after further fractionation of the soybean lecithin stabilizer. Animals have been given the improved emulsion intravenously for as long as eighty-four days without untoward results.[4]

With the successful incorporation of fat into mixtures for intravenous administration, the possibilities for parenteral alimentation are greatly enhanced. Not only can the three major organic food materials be provided along with salts, vitamins and water, but the high caloric value of fats permits the approach to the body's needs for energy. Once the foregoing procedures have been satisfactorily adapted to clinical needs, an additional important contribution of nutrition to medicine will have been recorded.

1. McKibbin, J.M.; Pope, A.; Thayer, S.; Ferry, H.M. Jr., and Stare, F.J.: J. Lab. & Clin. Med. 30:488, 1945.

2. Geyer, R.P.; Mann, G.V., and Stare, F.J.: J. Lab. & Clin. Med. 33:153, 1948.

3. Collins, H.S.; and others: J. Lab. & Clin. Med. 33:147, 1948.

4. Geyer, R.P.; Mann, G.V.; Young, J.; Kinney, T.D., and Stare, F.J.: J. Lab. & Clin. Med. 33:163, 1948.

Current Comment

ONE STAGE RESECTION AND ANASTOMOSIS OF THE COLON

The pendulum of surgery of the large intestine, according to Hinton,[1] has returned to primary resection with primary anastomosis, with or without a complementary ileostomy or colostomy. The early experiences with this method were discouraging. Billroth, in an analysis of 17 patients operated on by the one stage method, reported a mortality of 60 per cent. The exterioization method first practiced by Heinecke, by Paul, and by Bloch, and made popular by von Mikulicz, reduced the mortality from 60 per cent in the material of Billroth to 16.6 per cent in the cases reported by von Mikulicz. The multiple stage exteriorization operation or one of its modifications is now considered the operation of choice for resection of the colon at all levels, excluding the rectum. Despite its many advantages, especially in cases of obstruction of the bowel, the method presented certain definite disadvantages. Multiple operations, according to Hinton, mean multiple risks. Other objections are high incidence of complications, such as wound disruption, wound infection, persistent fistulas and postoperative hernias. Convalescence and hospitalization are prolonged; the artificial anus is an annoyance. The sole argument of low mortality rate following the multiple stage operation has been recently challenged by the reports of a number of surgeons who have been performing the one stage resection with a primary anastomosis with or without a primary colostomy or ileostomy. Thus Gibbon and Hodge[2] reported a mortality of only 14 per cent in their own material and in that of MacFee, Wilkie and Stone and McLanahan, representing a total of 246 patients operated on by the primary aseptic colonic resection. The one stage resection is advocated only for the patient who is not suffering from obstruction of the bowel. Babcock and Bacon,[3] as well as others, considered that in such a patient a primary proximal colostomy or ileostomy is not necessary. Hinton and Localio report 26 consecutive colonic resections involving the various regions of the colon above the peritoneal re-

1. Hinton, J.W., and Localio, S.A.: One-Stage Resection and Anastomosis of the Colon, Ann. Surg. 127:12-27 (Jan.) 1948.

2. Gibbon, J.H. Jr., and Hodge, C.C.: Aseptic, immediate Anastomosis Following Resection of the Colon for Carcinoma, Ann. Surg. 114:535-552 (Oct.) 1941.

3. Babcock, W.W., and Bacon, H.E.: Operative Treatment of Cancer of the Large Bowel Without Colostomy, Arch. Surg. 46:253-264 (Feb.) 1943.

flection performed in one stage without a proximal colostomy or ileostomy with a mortality of 3.8 per cent. The striking improvement with the one stage method was made possible not so much by the refinement of the technic of bowel anastomosis as by the recent advances in the preoperative and postoperative care of the patient. Among these should be mentioned correction of the fluid and electrolyte balance, transfusion of whole blood for anemia, correction of hypoproteinemia and of vitamin deficiencies. The preoperative and postoperative administration of succinyl sulfathiazole tends to render the bowel more or less aseptic. The use of the Miller-Abbott tube or the Levine tube aids in keeping the bowel deflated. The consensus seems to be that one stage resection is a safe procedure. Recent reports by Waugh[4] give a mortality rate of 4 per cent in 50 consecutive patients after primary resection of lesions of the left half of the colon; Dixon[5] reports a mortality rate of 2.4 per cent in 41 patients, and Wangensteen[6] a mortality rate of 1.6 per cent for 60 resections for lesions of the colon and the rectosigmoid.

REAGINS IN NASAL SECRETIONS

Nasal secretion has been suspected by numerous clinicians as an important factor in the mechanism of respiratory allergies. Samter and Becker[1] of the Allergy Unit, University of Illinois, tested the reagin content of nasal secretions in 10 ragweed-sensitized patients, two months after the ragweed season, using as controls nasal secretions from nonallergic persons. Nasal secretions were obtained by inserting a cotton plug saturated with 10 per cent sodium chloride solution into each nostril. Satisfactory response was usually obtained within ten minutes. The secretions thus obtained were passed through a micro-Seitz filter. The resulting cell-free liquid was used for passive transfer tests; 0.1 cc. of the liquid was injected into each of four sites in the left arm of normal persons whose skin tests had previously been negative to ragweed extract. Twenty-four hours later reinjections were given at these sites with 0.02 cc. of ragweed extract. Control tests for sensitivity to ragweed were made on unprepared skin of the same persons. The test showed that the nasal secretions of 7 of the 10 sensitized patients contained demonstrable amounts of ragweed reagin. All nasal secretions from normal persons were negative. Control tests with alder extract were also negative. The reagins thus demonstrated were therefore apparently specific for ragweed. These observations lead to a better understanding of the mechanism of respiratory allergy.

WORLD HEALTH ORGANIZATION

The Congress of the United States has passed and the President has signed a joint resolution which provides for membership and participation by the United States in the World Health Organization. Under the resolution as finally passed, the President designates from time to time to attend any specified session or session of the World Health Organization not to exceed three delegates of the United States and such alternates as may be consistent with the rules of procedure. One of the delegates is designated as the chief delegate. When the United States becomes entitled to designate a person to serve on the Executive Board of the World Health Organization, the President is authorized to designate a representative of the United States by and with the advice and consent of the Senate, and may designate one alternate This representative must be a graduate of a recognized medical school and must have spent not less than three years in active practice as a physician or surgeon. The representative is entitled to be paid at a rate of $12,000 per year and his alternate at $10,000 per year for such periods as the President may specify. The resolution also provides that the contribution of the United States should not exceed $1,920,000 per year and a sum not to exceed $83,000 per year for paying expenses incident to the United States' participation. The resolution also provides that nothing in the constitution of the World Health Organization in any manner commits the United States to enact any special legislative program regarding any matters referred to in the constitution. The American Medical Association has supported participation by the United States in the World Health Organization. The possibilities for the advancement of medical science, for better control of epidemics than has previously been possible, for standardization in many fields of medical service are exceedingly great. Among the three representatives appointed by the United States to attend the first assembly of the World Health Organization is Dr. James R. Miller of Hartford, Conn., a member of the Board of Trustees of the American Medical Association. The other members in attendance at the first assembly will be Drs. Thomas Parran and Martha Eliot. The United States does not attend the first session as a member because of the lateness of action in joining, so that these representatives appear at the first session as observers.

4. Waugh, J.M., and Custer, M.D.: Segmental Resection of Lesions Occurring in the Left Half of the Colon with Primary End-to-End Aseptic Anastomosis, Surg., Gynec. & Obst. 81: 593-597 (Dec.) 1945.

5. Dixon, C.F.: Anterior Resection for Carcinoma Low in the Sigmoid and the Rectosigmoid, Surgery 15: 367-377 (March) 1944.

6. Wangensteen, O.H.: Primary Resection (Closed Anastomosis) of the Colon and Rectosigmoid, Surgery 14: 403-432 (Sept.) 1943.

1. Samter, M., and Becker, E.L.: Proc. Soc. Exper. Biol. & Med., 65: 149, 1947.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

June 18, 1948.

Draft Bill Makes Doctors Subject to Special Calls

Final action is expected by the House this week on the draft bill. As passed by the Senate by an overwhelming 78 to 10 vote, the bill would require doctors and dentists, aged 18 through 44, to register and be subject to special calls. Medical men educated at government expense or those who were deferred during the war would be called first. The bill is aimed at bringing up the nation's peacetime forces to a record of 1,936,000 men. It would make most nonveterans, 19 through 25, subject to two years in the ranks. Men with dependents would be deferred. House leaders promised to bring the bill to a vote before the proposed June 19 adjournment.

Development of a Low Cost, Easily Operated Geiger Counter Sought

The Civil Defense Planning unit of the National Defense Department revealed that an urgent need for medical defense against atomic bomb attacks is development of low cost, easily operated geiger counters. They now range from $210 to $1,000 each. They are a prime civilian need to enable civilians to spot lingering, atomic death rays. Only a few of those now in use are considered suitable for detecting the area of a bombed city which had been made unsafe by radioactivity. The Army is now buying a small number of detectors for research and development work. The Civil Defense unit proposes the creation in each state of mobile units, trained and outfitted with instruments to detect radioactive poison left by an atomic bomb or some future atomic development. Officials declare that logical sources of personnel for such units would be doctors, chemistry and physics teachers, x-ray technicians and similar specialists. Training programs have been started through medical organizations, colleges and similar groups.

Capt. Melville J. Aston Heads Naval Medical School

The Navy Department announced that Captain Melville J. Aston has been ordered to command the Naval Medical Center in Bethesda, Md. He has been senior medical officer at the Norfolk Naval Shipyard, Portsmouth, Va.

Congress Approves Increases in Social Security Benefits

Both Houses of Congress approved multi-million dollar increases in Social Security payments to dependent children, the aged and the blind. The bill went to the White House for signature. It adds $184,000,000 annually to benefits received by 3,500,000 needy persons. Legislation increases the federal Social Security contribution to the states by $5 a month for the aged and blind and $3 a month for dependent children. Maximum is $50 for each aged and blind person and $27 for a dependent child. The increase was tacked onto a bill blocking extension of Social Security insurance to some 750,000 persons, chiefly salesman over whom employers do not exercise direct control.

Medical Legislation

STATE LEGISLATION

Kentucky

Bill Enacted.—S. 197 was approved March 29. It provides for the creation and establishment of a division of medical hospitals and related services in the department of health to make a survey of hospital facilities throughout the state and to accept federal funds to assist in the construction of additional needed facilities. The law requires the appointment of an advisory council and the preparation of necessary regulations and standards pertaining to the conduct and operation of hospitals constructed by virtue of the act.

Louisiana

Bills Enacted.—H. Res. 6 was adopted May 21. It directs the Committee on Charitable Institutions to visit any and all of the charitable and eleemosynary institutions of the state and to make any necessary recommendations which it deems appropriate. S. Con. Res. 4 was adopted May 20. It directs the Department of Institutions to take appropriate action to provide better hospital facilities for the indigent sick and to consider the installation of adequate free ambulance service and the establishment in private hospitals of charity beds on a contractual basis.

Massachusetts

Bill Introduced.—H. 2318 proposes that insurers and self-insurers under the workmen's compensation law shall be charged for laboratory and roentgenologic service fees as a part of the reasonable cost of a physician's services.

Bills Enacted.—H. 69 has become chapter 270 of the Laws of 1948. It provides that no corporation shall conduct a dental office and no person shall conduct a dental office under any name other than that of the dentist actually owning the practice. S. 349 has become chapter 359 of the Laws of 1948. It authorizes medical service corporations to contract with hospital service corporations for the joint or cooperative administration of their affairs.

Missouri

Bill Enacted.—H. 482 was approved May 10. It authorizes counties to levy a tax for the purpose of operating or maintaining public county health centers or institutions therein.

New Jersey

Bill Introduced.—A. Con. Res. 13 proposes the creation of a committee to investigate and study the subject of licensing and regulating the practice of chiropractic.

Bills Enacted.—A. 101 has become chapter 42 of the Laws of 1948. It authorizes the commitment in the county hospital, or other hospital, of any person who fails to obey the rules or regulations promulgated by the state department of health for the care, prevention or spread of tuberculosis, if such person is an actual menace to the community or the children in his household. A. 137 has become chapter 53 of the Laws of 1948. It authorizes municipalities which have no municipal hospital to make appropriations each year to be applied to the purpose of paying the cost of supporting and maintaining indigent patients in hospitals in the municipality supported by private charity.

Rhode Island

Bill Enacted.—H. 698 was approved April 30. It authorizes every superintendent of schools to cause such further examinations to be made of school children as he shall deem necessary for the purpose of guarding against any further outbreaks of infantile paralysis within the schools of any city or town. Such examinations shall include examinations of the legs and pedal extremities of such children by physicians, school nurses or persons qualified to make such examinations.

GOVERNMENT SERVICES

ARMY

THE NEW TRIPLER HOSPITAL

One of the most extensive construction projects ever undertaken in Hawaii is the new 1,500 bed U. S. Army Tripler General Hospital located at Moanalua, Oahu. Situated on the slopes of the Koolau Mountain Range, the hospital will occupy about 365 acres with a magnificent view of the island's southern coastline and thus take full advantage of the prevailing cool mauka winds. The design of the new hospital, the finest in the Army's system, will keep it abreast of the times for years to come. The neuropsychiatric section will be an individual unit where separate recreational, occupational therapy, physical therapy and eating facilities can be provided without the atmosphere common to hospitals caring for patients of this type. Physical reconditioning and recreational facilities have been incorporated here for the first time in a permanent hospital. The pathology department includes an amphitheater seating seventy-five persons for lectures and demonstrations. Since Hawaii lies within the earthquake zone, structural frames have been designed to resist lateral forces greater than those produced by the severest earthquake of record. The main structure is divided into twelve individual units,

The new Tripler General Hospital at Moanalua, Oahu.

each structurally isolated from adjacent units. A distinctive feature is the use of aquamedia, or canopies, which afford protection from sun or rain and create a pleasant streamlined impression. With thirteen elevators located at strategic points, the primary flow of all hospital traffic is vertical rather than horizontal, permitting members of the staff and patients to pass quickly from one ward to another. The operating suite contains seven operating rooms, immediately above which is a complete recovery ward where patients can be given the closest attention immediately following surgical intervention. In this section outlets for oxygen piped from a central storage point are available for every bed. Suction outlets are also available for immediate emergency. All patients have access to the sheltered lanai where they may view the magnificent sunsets. At the end of each ward is a large day room which in normal times serves for recreation but which can be used for immediate expansion of the hospital in case of emergency. The Pearl Harbor disaster brought to the attention of this community the critical need for adequate Army facilities which the old Tripler Hospital could not satisfy. In 1942 it was necessary for the commanding general to commandeer three of Honolulu's schools to provide temporary hospital facilities. To relieve this condition Congress in June 1944 authorized construction of the new Tripler Hospital. A pneumatic tube system connects all wards and departments through a central clearing station, by means of which patient histories, laboratory and other reports can be sent instantaneously to any part of the hospital. The main building is fourteen stories high, the tallest building in Hawaii. In addition there are nurses' quarters, officers' quarters, enlisted men's barracks, an orthopedic brace shop and other buildings for special facilities and community service.

REACTIVATE DRUG RESOURCES ADVISORY COMMITTEE

The surgeons general of the Army and Navy and Mr. C. P. Frailey, secretary, American Drug Manufacturers Association, announce that the World War II Drug Resources Advisory Committee has been reactivated. The new committee of fourteen members will hold its first meeting in June, when the status of domestic productive capacity and raw material stocks will be reviewed. Members of the committee serve without compensation and bear all operating expenses. The committee will be maintained as an industrywide function with no connection with any trade organization; it will immediately resume its wartime advisory functions in anticipation of civilian needs as well as those of military service.

ARMY MEDICAL LIBRARY

The Army Medical Library has furnished more than 1,000 volumes of medical literature to libraries in seven different nations to replenish their war-depleted stocks. This was in addition to literature previously furnished by the library to Belgium, China, France, Great Britain, Hungary and Yugoslavia.

In April the library sent twenty-one volumes of the Index-Catalogue to the Institute Superiore de Sanita in Rome to complete their set and deposited series III and IV in Veterinarhogskolans Bibliotek in Stockholm.

AN AUDIOLOGY MEETING

The Army sponsored a meeting in Washington, D.C., June 5, of persons interested in rehabilitation of Army and Navy personnel, Veterans Administration beneficiaries and civilians with impaired hearing. The purpose of the meeting was to evaluate the work being done and to plan a better organized program in the services and in civilian groups. The afternoon was given over to a tour through the Aural Rehabilitation Center at Forest Glen, Md. Among the speakers were Fred W. Kranz of Elmsford, N. Y.; Norton Canfield of Yale University School of Medicine, who reported on the meeting of the committee on hearing of the National Research Council; Merle Ansberry of Veterans Administration; Warren H. Gardner of the Cleveland Hearing and Speech Center, and D. W. Morris of Ohio State University; William G. Hardy of Johns Hopkins Hospital was moderator of a discussion on speech, lip reading, acoustics and auditory training.

NAVY

NEW MEDICAL TRAINING PROGRAM

The Surgeon General of the Navy has announced the expansion of the Bureau's professional training program for reserve and regular medical officers, which is similar to the recently expanded Army medical training program. The object is to permit more Navy doctors to meet the requirements for certification by the various American specialty boards and to encourage the young doctor to intern under the auspices of the Navy. The following are the important points in this program:

Graduates of class A medical schools who have been accepted for internship by a hospital approved for such training by the Council on Medical Education and Hospitals of the American Medical Association may be commissioned as lieutenants (junior grade), MC, USNR, and permitted to continue their intern training. They will receive all the pay and allowance of the rank while so serving. After completing their internships, the medical officers must remain on active duty for a period of one year. If they meet the professional, physical and moral requirements, they will be given every encouragement to transfer to the regular Navy.

Interns who have completed the one year of obligated service and who have transferred to the regular Navy may be considered for residency training on a competitive basis with other officer personnel of the regular Medical Corps.

Resident physicians now in civilian hospitals, or those accepted for approved residency training, are eligible for commissions in the regular Navy. Those so commissioned will be assigned to duty, with full pay and allowances, in the hospital in which they are already a resident or to which they have been accepted for residency training. Every attempt will be made to permit residents holding commissions in the regular Navy to complete their training in event of an emergency.

The Navy has at present 400 approved residencies and fellowships in the various specialties recognized by the American Specialty Boards in Naval and civilian hospitals. This educational training involving the 400 residencies is divided into two programs.

Program A: One hundred of these residencies, courses and fellowships will be made available for civilian physicians accepting a commission in the Navy. An additional hundred civilian physicians will be commissioned in the Navy and permitted to pursue their own course, fellowship or residency, provided that it is approved by the Council on Medical Education and Hospitals of the American Medical Association with concurrence of the Specialty Board. On acceptance of the designated training, they will be required to agree to remain in the Navy for a certain obligated time.

If on original appointment a candidate has not been approved for more than one year of training, during his first year of residency training (program A) he may compete for 1 of the 300 residencies (program B) available to the Regular Naval medical officers, and if he obtains such training he will obligate himself to remain on active duty for an additional period depending on the amount of time spent in training.

Program B: Three hundred residencies, fellowships or courses will be reserved for continuing the training program as presently organized for regular medical officers.

The obligated service following graduate medical training (courses, fellowships and residencies) in Naval hospitals is one year for each year of training received.

Information concerning any part of the program may be obtained by writing the Chief of the Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

NAVAL CAREER IN RESEARCH

The Bureau of Medicine and Surgery has added the field of research to the list of specialties for which medical officers may qualify and thus be assured of spending a major part of their Naval career in research. While the qualifications required for this specialty are not inflexible, it is desirable to have a Ph.D. in one of the basic medical sciences. However, the application of any officer of the Naval Medical Department having an interest in research as a career will be considered, and if such training is indicated he will be started on a tour of duty at one of the Naval Medical Research Institutions, followed later by short tour of sea duty to provide an over-all picture of the Navy's needs. Training in civilian research laboratories will be offered also. Applications are desired from physicians and other scientists now in the Naval Reserve and also from qualified civilians interested in a career of naval medical research.

PERSONALS

Dr. Henry L. Bockus, professor of gastroenterology at the University of Pennsylvania Graduate School of Medicine, Philadelphia, spoke on "The Present Status of Management of Peptic Ulcer Disease" at the Navy Medical Center, Bethesda, Md., May 14. This was the last of the present series of guest lectures.

Lieut. Comdr. Vernon T. Palmer, after more than thirty years in the Hospital Corps of the Navy, retired May 3 and will make his home in Seattle. Formerly a chief pharmacist in the Navy, he was awarded the Bronze Star for meritorious service with the 3d Amphibious Corps during the landings on Bougainville, Guam, Palau and Okinawa.

Comdr. Fred G. Hirsch (MC) addressed the New York Academy of Medicine April 29 on "Relationship Between the Electro-Conductivity and Erythrocyte Concentration in the Blood."

AWARDS AND COMMENDATIONS

Dr. Sumner L. Koch

The Certificate of Merit has been awarded to Dr. Sumner L. Koch, associate professor of surgery, Northwestern University Medical School, Chicago, for his outstanding contribution to the war effort while a member of the Subcommittee on Infected Wounds and Burns of the National Research Council. The new compression technic used in place of tannic acid and gentian violet in the treatment of burns was a product of the research and experiments which he directed.

Dr. Winfred Overholser

The Bureau of Medicine and Surgery on April 22 presented a Certificate of Appreciation to Dr. Winfred Overholser, superintendent of St. Elizabeths Hospital, Washington, D. C., and a Certificate of Achievement to that hospital. The certificates were awarded in recognition of the valuable assistance rendered by St. Elizabeths Hospital and by Dr. Overholser, personally, to the Medical Department of the Navy during World War II in the training of Navy medical personnel and treatment of Navy patients.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

McCaffrey, W. T.....Weehawken, N. J.
McClenathan, C. K.....Washington, Pa.
McClure, C. C.....Nashville, Tenn.
McElroy, G. L.....New Franklin, Mo.
McMahon, R. J.....Rochester, N. Y.
McMurtrey, G. B.....Cody, Neb.
Malec, H. W.....Milwaukee
Mallamo, F. W.....Fairmont, W. Va.
Martsolf, J. H.....New Brighton, Pa.
Mauler, F. Jr.....Columbus, Ohio
Mayo, E. A. Jr.....Richland, Ga.
Meunier, H. J.....Oakes, N. D.
Midgley, W. V. S.....Scarsdale, N. Y.
Milam, D. F.....Sissonville, W. Va.
Miller, M. R.....San Francisco
Minges, R.R.....Cincinnati, Ohio
Mitchell, E.H. Jr.....Indianapolis, Ind.
Moats, A. W. Jr.....Fairchance, Pa.
Moffitt, C. R.....Alturas, Calif.
Moore, R.A. Jr.....Hampden-Sydney, Va.
Morgan, M.B.....New York, N. Y.
Morgenlander, S. B.....New York
Morris, J.T. Jr.....Birmingham, Ala.
Morrison, D.R.....New York, N. Y.
Morrison, F.D.....Kirkland, Wash.
Morrison, J.W.....Oklahoma City, Okla.
Morissette, R.A.....New Haven, Conn.
Mullin, E. E.....Manlius, Ill.
Murphey, E. M. III.....Macon, Miss.
Murphy, C. J. Jr.....Washington, D. C.
Musgrave, H. S.....Mount Lebanon, Pa.
Myers, R. O.....Los Angeles
Nash, T. M.....Dallas, Texas
Nauss, T. J.....Wilkes-Barre, Pa.
Newcomb, C. E.....Minneapolis
Nicholas, J.A.....New York, N. Y.
Nixon, R. E. Jr.....Denver
Nolan, R. B.....New York
Norton, R. O. Jr.....Louisville, Ala.
O'Brien, J.G.....Otway, Ohio
O'Donnell, J.H.....Pittsburgh, Pa.
Olsavsky, J. C.....Bridgeport, Conn.
O'Neil, J. W.....Malden, Mass.
O'Neil, M. B.....Buffalo
Osborn, J.E.....Wolcott, N. Y.
Osborne, R.W.....Windfall, Ind.
Osborne, W.W.....Gordonston, Ga.
O'Sullivan, E.P.....Newark, N. J.
Orloff, T.....Philadelphia
Orris, L.....New York
Orvin, G. H.....Charleston, S. C.
Owrey, R. H.....Pittsburgh
Page, H. G.....South Ryegate, Vt.
Paquin, A. J. Jr.....Bisbee, Ariz.
Parker, L.F.....Perry, Iowa
Parsons, W. H.....Erie, Pa.
Percy, W.E. Jr.....Ida, La.
Persky, L.....Cleveland Heights, Ohio
Phillips, C.M.....San Antonio, Tex.
Phillips, G. W.....South Birmingham, Ala.
Pigozzi, W.N.....Greenock, Pa.
Pohlidal, S. J.....New York
Pollock, L.H.....Kansas City, Mo.
Pordy, L.....New York, N. Y.
Poskanzer, C. L.....Albany, N. Y.
Powelson, D. H.....San Francisco
Powers, R. F.....Alhambra, Calif.
Prystowsky, M.....Charleston, S. C.
Quillin, R. C.....Coeburn, Va.
Radcliffe, W.D. Jr.....Belen, N. M.
Ravven, R.M.....Wahan, Mass.
Reedy, R.N.....Baldwin Park, Calif.
Reid, R.A.....Sevelland, Tex.
Reitmann, J.H.....Red Wing, Minn.
Ricci, J.J.....Flushing, N. Y.
Ricks, M.....San Francisco, Calif.
Rifner, E.S.....Spiceland, Ind.
Riley, W.G.....Meridian, Miss.
Ritter, H. Jr.....New York, N.Y.
Ritter, T. J.....Allentown, Pa.
Rosenbaum, S.....New York, N.Y.
Rowbottom, S.W.....Geneva, Ill.
Rubin, H.S.....Swampscott, Mass.
Ryan, J.E.....Lebanon, Ky.
Ryder, C.T. Jr.....Colorado Springs, Colo.
Sahs, M.H.....Earlville, Iowa.
Sakin, G.I.....New York, N.Y.
Sanchez-Ubeda, R.M.....Condado, Santurce, P.R.
Sar, E.....New York, N.Y.
Schaefer, L.E.....Denver, Colo.
Schaeffer, R.C.....Redondo Beach, Calif.
Schejbal, G.J.....St. Louis, Mo.
Schonebaum, R.M.....Omaha, Neb.
Schwartz, M.S.....Fresno, Calif.
Scott, W.M.....Milledgeville, Ga.
Seitz, E.R.....McComb, Miss.
Sellers, V.O. Sr.....Natchitoches, La.
Sennett, L.W.....Milwaukee, Wis.
Shands, W.C.....Jackson, Miss.
Shanedling, P.D.....Chicago, Ill.
Shell, J.H. Jr.....Greenville, S.C.
Sherbon, D.....Philadelphia, Pa.
Simon, S.J.....Los Angeles, Calif.
Simons, G.M.....Cumberland, Md.
Simpson, N.H. Jr.....Little Rock, Ark.
Skemp, J.T.....La Crosse, Wis.
Smith, J.R.....New York, N.Y.
Smith, W.B.....Newton Falls, Ohio
Smith, W.H.....Corbin, Ky.
Smith, W.S.....Greenwick, Conn.
Sommer, R.R.....Grove City, Ohio
Sponsel, K.H.....Chicago, Ill.
Steinberg, M.E.....New York, N.Y.
Stichel, F.L. Jr.....Baltimore, Md.
Stillman, P.H.....New York, N.Y.
Stollerman, G.H.....Forest Hills, N.Y.
Strickland, N.H. Jr.....Kissimmes, Fla.
Stueber, P.J. Jr.....Lima, Ohio
Talbert, T.E.....Portland, Oreg.
Taylor, M.....Chelsea, Mass.
Taylor, R.F.....Charlotte, Mich.
Tazzioli, H.A.....Detroit, Mich.
Tessitore, A.....Washington, D.C.
Tracewell, G.L.....Okmulgee, Okla.
Turner, D.B.....Shreveport, La.
Unger, R.L.....Stickney, S.D.
Vargas, L.L.....Providence, R.I.
Victor, W.H.....Rockaway Beach, N.Y.
Ward, E.J.....Philadelphia, Pa.
Ward, R.D.....Nashville, Tenn.
Waterman, W.P. Jr.....New London, Conn.
Whitaker, E.C.....Cumberland, Ky.
Whitehurst, J.R.....Houston, Tex.
Williams, R.W.....Kinston, Ala.
Wiley, R.H.....Amityville, N.Y.
Williams, R.W.....New York, N.Y.
Wilson, J.C. Jr.....Pasadena, Calif.
Wilson, R.B.....Lincoln, Neb.
Wohlrabe, A.C.....Minneapolis, Minn.
Wood, E.S.....Chicago, Ill.
Wood, W.L.....Worcester, Mass.
Woodward, C.E.....Glen Falls, N.Y.
Zeiss, C.J.....Valley Stream, N.Y.
Ziegler, P.R.....Baltimore, Md.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Research Society Formed.—The Medical Research Society of Southern California was recently formed to further high standards of medical research and education and to foster public interest in the need of research. Dr. Charles M. Carpenter, professor of infectious diseases, Medical School of the University of California, Los Angeles, has been elected chairman. Advisory council members are deans of Southern California medical schools: Dr. Walter E. Macpherson, College of Medical Evangelists; Dr. Burrell O. Raulston, University of Southern California School of Medicine; Dr. Stafford L. Warren, Medical School of the University of California, Los Angeles campus, and Dr. Lewis T. Bullock of the Los Angeles County Medical Society.

CONNECTICUT

Faculty Appointments and Promotions.—Yale University School of Medicine, New Haven, announces the following appointments and promotions. Dr. Thomas R. Forbes, assistant professor of anatomy, becomes assistant dean of the School of Medicine in charge of student affairs, succeeding Donald H. Barron, Ph.D., associate professor of physiology. Those promoted to associate professorships include Drs. John R. Brobeck, physiology; Clement C. Clay, hospital administration, and Fredrick C. Redlich, department of psychiatry and mental hygiene. Assistant professors include: Drs. Helen R. Gilmore, who will be in charge of the psychiatric inpatient clinic; William W. Engstrom and Henry D. Hoberman, medicine; Arnold H. Janzen, radiology, and Dorothy M. Horstmann, preventive medicine. Dr. Leonell C. Strong, research associate in anatomy, was promoted to the rank of professor. Clinical appointments include: Drs. Aloys G. Ansprenger, assistant clinical professor of radiology; James M. Cunningham, lecturer in psychiatry and mental hygiene, promoted to the rank of associate clinical professor; Gideon K de Forest, assistant clinical professor of medicine; Russell V. Fuldner, lecturer in anatomy and assistant clinical professor of orthopedic surgery; Mildred H. January, assistant clinical professor of pediatrics and psychiatry and mental hygiene, and Bernard L. Kartin, assistant clinical professor of medicine.

GEORGIA

Personal.—Dr. Robert Rogers, Gainesville, has been elected chairman of the State Board of Health to succeed Dr. Charles L. Ridley, Macon.

State Medical Election.—At the annual meeting of the Medical Association of Georgia, April 27-30, Dr. Edgar H. Greene, Atlanta, became president and Dr. Enoch Calloway, LaGrange, became president-elect. Dr. Edgar D. Shanks, Atlanta, was reelected secretary treasurer.

Typhus Menace Reduced.—The state department of Public health carried on ddt dusting and rat eradication activities in seventy-six Georgia counties in 1947, with the result that in five of the most densely populated counties, comprising one fourth of the state's population, the number of typhus cases decreased 57 per cent over 1946 and 92 per cent over 1945, when DDT dusting was begun. From a total of 1,111 cases of typhus reported in 1945, the number dropped to 436 in 1947, a decline of 61 per cent for the state as a whole. DDT dusting was extended in 1947 to include farm residences and outbuildings and more than 182,787 premises were dusted, nearly 35,000 more than in 1946. Poison bait was also used in some areas, and ratproofing buildings, refused collecting and sanitary land fills were also employed.

ILLINOIS

Fewer Cases of Communicable Disease.—The state department of public health reports that the number of cases of most communicable diseases in the first thirteen weeks of 1948 were fewer than those reported in 1947. Outstanding exceptions were measles and mumps, of which Illinois experienced "minor epidemic waves." Twenty-eight cases of diphtheria were reported in the first quarter of 1948, a decrease of 16 cases for the corresponding period in 1947. This is the lowest ever recorded in Illinois. Poliomyelitis morbidity reports show a decrease of 68 per cent from those for 1947.

Chicago

Research in Blood Diseases.—The Hematology Research Foundation recently celebrated the achievement of its goal of $25,000 to advance the study of leukemia and other blood diseases. The money raised by the foundation is given to Michael Reese Hospital to support this research.

Film to Record Cancer Growth.—Northwestern University Medical School, by means of automatically focused motion picture camera, will start this fall to record over an extended period growing cancer cells. John Nash Ott Jr., Winnetka, has been commissioned to do the photographic work in an air-conditioned, underground laboratory, under the direction of Dr. William B. Wartmen, Morrison professor and chairman of the department of pathology.

Rotary Club Devotes Session to Tuberculosis.—The Rotary Club of Chicago, at its meeting in the Sherman Hotel, June 1, considered "Tuberculosis: Its Problem and Solution." The speakers were Drs. Morris Fishbein, Editor of THE JOURNAL; Herman N. Bundesen, president, Chicago Board of Health, and James H. Hutton, chairman, committee on tuberculosis control, Chicago Medical Society, who acted as chairman.

Hektoen Institute Awards.—Hektoen Institute for Medical Research of the Cook County Hospital won the following prizes at the Illinois State Medical Society Scientific Exhibits: Gold Medal, educational value, "Amino Acids in Clinical Medicine," Drs. Karl A. Meyer, Donald D. Kozoll, William S. Hoffman, Frederick Steigmann and Hans Popper; Bronze Medal, original investigative work, "Radioactive Isotopes in Peripheral Vascular Work," Drs. Morris T. Friedell, Fenton Schaffner, William J. Pickett and Irvin F. Hummon.

Instructorship Awards.—Drs. Henry G. Poncher and Eric Oldberg were named by the senior students at the University of Illinois College of Medicine as winners of the Raymond B. Allen Instructorship Award, designed to honor excellency in individual instructorship rendered by faculty members to students. Dr. Poncher, head of the department of pediatrics, was honored for clinical instruction. The award for excellency in didactic instruction has been given to Dr. Oldberg, head of the department of neurology and neurological surgery. Recipients of instructorship awards from other classes are as follows: junior class—Dr. Poncher for clinical instruction and Dr. Isadore A. Rabens, clinical associate professor of medicine, for Pfeiffer, head of the department of pharmacology and pharmacognosy; freshmen class—tie between William J. Furuta, Ph.D., and Parke H. Simer, Ph.D., of the department of anatomy.

INDIANA

Health Association.—Dr. Walter L. Portteus, Franklin, became president of the Indiana Public Health Association at the annual meeting in Indianapolis. The principal speaker at the banquet was Dr. Cleon A. Nafe, Indianapolis, president of the Indiana State Medical Association.

General Practitioner Award.—The Indiana State Medical Association will present a medal to some outstanding general practitioner at the annual meeting in October. Each county medical society will be invited to submit a nomination to the council. The "Hoosier Doctor of the Year" will be the Indiana State Medical Association nomination for the American Medical Association's General Practitioner Award.

LOUISIANA

Personal.—Ernest Carrolo Faust, Ph.D., professor of parasitology and head of the department of tropical diseases at Tulane University of Louisiana School of Medicine, New Orleans, has been elected honorary member of the Tropical Medicine Society of Belgium.

State Medical Election.—At the annual meeting of the Louisiana State Medical Society in Monroe, April 12-14, Dr. Edwin H. Lawson, New Orleans, was chosen president-elect, and Dr. Marion D. Hargrove, Shreveport, was installed as president. Dr. Valentine H. Fuchs, New Orleans, was named delegate to the American Medical Association 1949 and 1950, with Dr. George H. Hauser, New Orleans, named alternate. The next annual meeting will be held in New Orleans.

MASSACHUSETTS

Seminar on Health Education.—The Harvard Summer School and the Massachusetts Department of Public Health, Boston, will jointly sponsor a four week graduate seminar in health education. Opening on June 28, it will offer training in health education for school administrators, for teachers of nutrition, social studies, health and physical education and for members of agencies in the school health field.

Massachusetts General Appoints Research Committee.—A scientific advisory committee has been appointed at Massachusetts General Hospital, Boston, to review research projects, advise on policies and inform the hospital trustees on the general value of present and future research. Dr. Walter Bauer, Boston, is chairman of the committee. Members of the committee from Harvard Medical School are Drs. C. Sidney Burwell, dean; John Homans, Eugene M. Landis and J. Howard Means; others are Karl T. Compton, president, Massachusetts Institute of Technology, Cambridge; Carl F. Cori, St. Louis, co-winner of the Nobel Prize in Medicine, 1947; Nathaniel W. Faxon, director of the hospital; Edward D. Churchill, and Herbert S. Gasser, director, Rockefeller Institute. The hospital feels that the presence of distinguished scientists from other parts of the country gives the committee a broader perspective on research problems than would otherwise be possible.

MICHIGAN

Honor Veteran Doctors.—Citizens of Marine City on April 4 honored two of their physicians, Drs. Thomas E. DeGurse and Aaron B. Armsbury, at a testimonial dinner. Dr. DeGurse was recently chosen "Michigan's Foremost Family Physician" by the state medical association. Dr. Armsbury completed fifty years of practice in Marine City March 17. Both men have also served the community in civic positions.

Women Physicians Establish Scholarship.—The Dr. Esther H. Dale Scholarship Fund has been established by Nu Sigma Phi, a women's medical sorority at the Wayne University College of Medicine, Detroit, in honor of Dr. Dale's achievements in medicine and in sorority activities. The scholarship will aid promising women medical students who need help with their education. Dr. Dale, a 1941 alumna of the college of medicine, is an instructor in pathology there. She is also National Noble Grand of Nu Sigma Phi and past president of the Blackwell (Michigan) branch of the American Women's Medical Association.

MINNESOTA

Fake Eye Specialist Imprisoned--Elliot Wilkinson, 54, Dallas, Texas, was sentenced to not more than five years at hard labor in the Minnesota Prison at Stillwater, by the judge of the Finkelnburg District Court, Winona. Wilkinson pleaded guilty to an information charging him with grand larceny in the second degree. He was arrested on May 9 by Winona police after he had swindled a Winona County farm woman out of $60 by falsely representing himself as an eye specialist from Chicago, and further stating that the patient had cataracts. Wilkinson's record (THE JOURNAL Dec. 10, 1927, page 2047; July 2, 1932, page 41; Jan. 2, 1937, page 55) includes a sentence of five years in 1932 in the State Prison at Stillwater for grand larceny in the first degree, growing out of a $1,500 swindle perpetrated in 1924; seven years in the Federal Prison at Atlanta, Ga., for using the mails to defraud, and 5 years in the Virginia State Prison at Richmond. To farm people Wilkinson represented himself as an eye specialist; after diagnosing the case as cataracts, he would extract a large sum of money from the patient. He would insert a liquid preparation into the eye and then show the patient a small piece of tissue paper which he represented as being the cataract.

NEW JERSEY

Society News.—A Physicians' Art Association of New Jersey, open to all members of the Medical Society of New Jersey, has been organized, with Dr. Robert A. Giuliana, Newark, president, and Dr. Marvin C. Becker, Newark, secretary.

Community Honors Physician.—The entire rural Hunterdon County community met in the school gymnasium at Bloomsbury, April 17, to honor Dr. Edgar W. Lane on his completion of thirty years of service. Dr. Lane is a graduate of the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1915.

NEW YORK

Personal.—Dr. Stanley W. Sayer, Gouverneur, district state health officer in charge of the Gouverneur District, retired April 7 after more than thirty years' service on the staff of the New York State Department of Health.

Institute on Community Nutrition.—A second Community Nutrition Institute, sponsored by Syracuse University and the New York State Department of Health, will be presented July 5-17 at Washington Arms, Syracuse. July 5-10 the discussion of technics in community nutrition will include the place of nutrition in the public health program, food planning, how to get the public to use nutrition information, psychologic factors affecting nutrition and relationships of professional personnel with the client. The second week will include a discussion of nutrition in maternal and child health, the role of nutrition in postponable diseases, its relation to susceptability to disease, and nutrition in work performances.

New York City

Columbia Appointments.—The following appointments to the staff of the Columbia University College of Physicians and Surgeons were announced recently and will be effective July 1: Dr. Samuel M. Peck, associate clinical professor of dermatology; Drs. Louis E. Siltzbach, Solomon Silver and Louis J. Soffer, assistant clinical professors of medicine, and Dr. Arthur S. W. Touroff, clinical professor of surgery.

Positions Available in Neuropathology.—Kings County Hospital, Brooklyn, has available a full time and a half time position in neuropathology The new neuropathologic laboratory is a part of the new psychiatric facility. This is a teaching hospital, and the work would comprise service to the psychiatric, the neurologic and the neurosurgical departments of the hospital. Applicants should address inquiries to Dr. Sam Parker, Director of Psychiatry, Kings County Hospital, 606 Winthrop Street, Brooklyn 3, stating their background and qualifications.

Winners of Scholarships in Ophthalmology.—New York University College of Medicine has announced that Drs. Goodwin M. Breinin and Walter J. Maher, New York, Drs. Edwin H. Kent, Riverside, Conn., and Charles H. Toomey, Lakewood, Ohio, won the third annual New York City Lions' Club Scholarships for graduate training in ophthalmology. They will study special phases of eye conservation at Bellevue Hospital under the direction of Dr. Daniel B. Kirby, chairman, department of ophthalmology, New York University College of Medicine. The awards were made at a Lions club luncheon on June

Incoming Patients to Be X-rayed.—Morrisania City Hospital in the Bronx inaugurated in May the procedure of routine roentgen examinations of all incoming patients to discover whether they have tuberculosis. Detection of tuberculosis before admission will permit the hospital to safeguard its staff and patients and will make it possible to treat the patients immediately. The procedure is a joint project of the Bronx Committee of the New York Tuberculosis and Health Association and Morrisania Hospital. The association is providing the x-ray machine and technicians to operate it, and the hospital will be responsible for clinical study and follow-up on patients discovered to have tuberculosis.

PENNSYLVANIA

Cancer Detection Program.—A cancer detection program has been established in Fayette County. Sixty doctors of the county will act as examiners of well patients to insure early diagnosis. Patients may make appointments at information centers and be examined by a doctor chosen from a list there. The examination fee is $5, but in the case of indigents the American Cancer Society assumes this obligation. The program has received the full endorsement of the Fayette County Medical Society.

Philadelphia

Foundation Aids Research in Dermatology. An outright grant of $100,000 has been made to the University of Pennsylvania by the Rockefeller Foundation for the continuing development of the research program of the department of dermatology in the School of Medicine. The grant will be used to investigate fundamental problems related to disturbances of the skin. According to Dr. Donald M. Pillsbury, professor of dermatology and syphilology and chairman of the department in the Graduate School of Medicine at the University, the grant will make it possible to take full advantage of the facilities for research in the Hospital of the University of Pennsylvania, the Skin and Cancer Hospital, Graduate Hospital of the University of Pennsylvania and Children's Hospital. Facilities for investigative work in the department of dermatology at the university are most complete.

WEST VIRGINIA

Special Society News.—During the recent annual meeting of the state medical association, the West Virginia Society of Anesthesiologists was organized with Dr. Delmas E. Greeneltch, Wheeling, president, and Dr. Arkie B. Bowyer, Charleston, secretary-treasurer. Other special societies meeting in conjunction with the state association elected officers as follows: West Virginia Heart Association, Dr. William A. Thornhill Jr., Charleston, president, and Dr. Fred S. Richmond, Beckley, secretary-treasurer. West Virginia Obstetrical and Gynecological Society, Dr. Wilbur E. Hoffman, Charleston, president, and Dr. Harry G. Steele, Bluefield, secretary-treasurer. West Virginia Association of Pathologists, Dr. William T. McClure, Wheeling, president, Dr. Walter G. J. Putschar, Charleston, president-elect and Dr. Milford L. Hobbs, Morgantown, secretary-treasurer. Dr. L. Rush Lambert, Fairmont, was elected president of the West Virginia Chapter of the Medical College of Virginia Alumni.

GENERAL

Booklet on Cerebral Palsy.—The National Society for crippled Children and Adults, Inc., is distributing a fifty-seven page booklet on "The Problem of Cerebral Palsy Today". Copies may be obtained from the society at 11 South La Salle Street, Chicago 3, at 25 cents each.

Society Election.—At the Atlantic City meeting of the Federation of American Societies for Experimental Biology, March 14-19, the American Institute for Nutrition elected Elmer M. Nelson, Ph. D. Washington, D. C., president and Joseph H. Roe, Ph. D., Washington. D. C., secretary

Appointed to Federal Security Administration.—J. Donald Kingsley has been appointed assistant federal security administrator to succeed Maurice Collins, Washington, D. C., who retired last September after thirty-five years of federal service. Mr. Kingsley served most recently as economic adviser to the International Labor Office in Geneva, Switzerland, and as chief of the I. L. O. mission to Greece.

Cancer Fellowships Available.—Clinical fellowships in the diagnosis and treatment of cancer have been established by the American Cancer Society, Inc., for young physicians of promise and may be secured through hospitals designated by the society that offer postgraduate training in malignant diseases, surgery, obstetrics and gynecology, orthopedic surgery, otolaryngology, urology, radiology, pathology and internal medicine. The one year fellowships, renewable to a total of not more than three years, carry a stipend of $2,400 to $3,600 per year.

Placement of Electron Microscopists.—The Electron Microscope Society of America has set up a placement service for the mutual benefit of its members and potential employers. The society has on its membership roll the names of every active electron microscopist in this country. Employers seeking scientists or technicians for work in this field may use the placement service. Inquiries should be directed to Dr. C. J. Burton, Secretary, Electron Microscope Society of America, American Cyanamid Company, Stamford, Conn.

Red Cross Blood Bank Project.—Dr. Ivan W. Brown, Duke University School of Medicine, Durham, N. C., has been appointed temporary assistant national medical and technical director of the national blood bank program of the American Red Cross. From headquarters in Washington, D. C., Dr. Brown will fly to any section of the nation to advise and assist in work on local blood bank projects. National administrator for the work is Rear Admiral Ross T. McIntyre. Dr. Brown is a graduate of Duke University School of Medicine 1939.

Medical Mission to Germany.—The Unitarian Service Committee has organized a medical mission to Germany. Fourteen lecturers will discuss anatomy, physiology, biological chemistry, pharmacology, internal medicine, surgery, gynecology and obstetrics, ophthalmology, psychiatry, pediatrics and otorhinolaryngology. The mission will be made up of Drs. Otto Krayer, Boston, chairman; Dallas B. Phemister, Chicago, vice chairman; and David G. Cogan, Boston; Lyman G. Craig, Ph. D., New York; Herman DeWilde, Boston; John T. Edsall, Boston; Francis D.W. Lukens, Philadelphia; Benjamin H. Robbins, Nashville, Tenn.; ; Carl F. Schmidt, Philadelphia; Erwin W. Straus, Lexington, Ky.; Howard C. Taylor Jr., New York; Joseph F. Volker, Boston; William M. Wallace, Boston, and Friedrich Wassermann, Chicago.

Survey of Multiple Sclerosis.—A sixteen page manual of information on the diagnosis and treatment of multiple sclerosis, prepared by the National Multiple Sclerosis Society, was distributed to about 76,000 physicians in the United States during May. The manual, published in full in the Nov. 1, 1947 issue of THE JOURNAL, gives the latest information on rehabilitation and symptomatic treatment. A letter was enclosed asking physicians to inform the society of the number of multiple sclerosis patients in their care. These numerical data will be valuable as an initial fact-finding effort preceding a national survey on the prevalence of the disease in the United States. National Multiple Sclerosis Society will soon undertake this survey with the advice and cooperation of the U. S. Public Health Service.

ALASKA

Crippled Children to Be Treated in Chicago.—Twenty-four children from the Alaskan Crippled Children's Service in need of specialized medical care and hospitalization will be treated this year at the Home for Destitute Crippled Children, a unit of the University of Chicago Clinics. The project, undertaken by the home to alleviate the suffering of the most difficult and complicated cases among Alaska's orthopedic patients, will make possible medical care and hospitalization for 2 children each month. The Home for Destitute Crippled Children was founded in 1891 and for many years has been affiliated with the University of Chicago.

FOREIGN

International Congress of Otolaryngology.—The British Association of Otolaryngologists is organizing the Fourth International Congress of Otolaryngology to be held in London, July 17-23, 1949. There will be further meetings, for those interested, at Oxford, Cambridge and Edinburgh on July 25-26. The secretaries of the national otolaryngological societies have been asked to send a list of their members for individual notification. Should any association not receive this letter, its secretary should communicate with the General Secretary, Mr. F. C. W. Capps, F.R.C.S., 45, Lincoln's Inn Fields, London, W. C. 2.

Medical Weeks.—The International Association of Medical Press has organized European conferences and weeks. The Italian Medical Week in Spain will be a series of lectures held by Italian professors and the universities of Zaragoza, Madrid, Barcelona, Valencia, Valladolid and Santiago de Compostella; it will take place in June 1948. The official invitations have been sent from the Spanish universities to the most eminent Italian professors. Reciprocally, a Spanish Medical Week will soon be organized at the University of Bologna in November 1948. The Italian Medical Week at Paris was to have taken place in December 1947 but was postponed because of the political situation in France. An effort will be made to arrange the meeting for June or September, 1948. Professor G. Caronia, rector of Rome University, has been appointed chief of the Italian delegation. Professor Caronia has already been invited by the French government in Paris to contact the *doyens* of the Medical Faculty of the University of Paris about the organization of the meeting. French Medical Week at Rome will be organized with the cooperation of the rector of Rome University, Professor Caronia, and the *doyens* of the faculty of medicine and pharmacy of the University of Paris.

CORRECTIONS

Internship and Residency Number —The following corrections pertain to the Internship and Residency number of THE JOURNAL published May 1, 1948.

Dr. B. D. Jay is chief of the Radiology service, Charles S. Wilson Memorial Hospital, Johnson City, N. Y., instead of Dr. E. M. Jones (page 79).

Data regarding St. Mary's Hospital, Brooklyn (page 57), are revised as follows: Chief of service, Dr. Henry J. Goubeaud Jr.; inpatients treated, 2,617; number of outpatient visits, 5,343; deaths on service, 7; number of autopsies, 1; assistant residents, 2; residents, 1; service begins, July 1; length of service, 2 years; minimum stipend per month, $50.

Data regarding Edward J. Meyer Memorial Hospital, Buffalo (page 86), are revised as follows: Dr. John D. Stewart, chief; inpatients treated, 147; deaths on service, 23; number of autopsies, 13; residencies offered, 2 starting July 1; length of service, 3 years; minimum stipend per month, $100.

Marriages

JAMES EDWARD SEGERSON to Miss Margaret Isabel Crowley, both of Rochester, N.Y., May 1.

AUGUSTUS LYNN BAKER Jr., Dover, N.J., to Miss Eleanor Jean Black at Mountain Lake, April 24.

PETER RANDALL, Philadelphia, to Miss Rose Gordon Johnson of Baltimore, May 1.

SHEROD M. BILLINGTON, Seattle, to Miss Carol Dore, of Redmond, Wash., April 17.

CHARLES LEONARD SMITH, Spartanburg, S.C., to Miss Bobbie Jean Love of Asheville, N.C., April 3.

DONALD ROY PRATT to Dr. ARLENE MARJORIE MANN, both of San Francisco, April 7.

JACK SPENCER, Portland, Maine, to Mrs. Charlotte Nolan Crawford of Bryn Mawr Pa., in March.

CHARLES GLENN SAWYER, New Bern, N.C., to Miss Elizabeth Gaston Ivey of Albemarle, April 24.

OWEN FLOYD HUGHES to Miss Betty Joyce Blalock, both of Birmingham, Ala., in April.

MICHAEL V. GILBERTI, Aliquippa, Pa., to Miss Grace Anne Chase of Coatesville, April 24.

Deaths

Edward Joseph O'Brien Jr., ⊕ Newton, Mass.; born in Chelsea, Mass., in 1888; Tufts College Medical School, Boston, 1912; specialist certified by the American Board of Urology, Inc.; member of the New England Obstetrical and Gynecological Society and of the American Urological Association; fellow of the American College of Surgeons; at one time college football referee; affiliated with St. Elizabeth's Hospital, Brighton, Somerville (Mass.) Hospital, State Infirmary, Tewksbury, Metropolitan State Hospital, Waltham, Charles Choate Memorial Hospital, Woburn, and the Cambridge City Hospital, where he died February 15, aged 60, of coronary thrombosis.

Thomas Christopher Patterson, Lisbon, N. D.; born in Grafton, Ontario, Canada, Jan. 9, 1864; Trinity Medical College, Toronto, Canada, 1889; member of the American Medical Association; formerly alderman, member of the park commission, president of the county board of health and member of the school board; regimental surgeon for the first North Dakota infantry regiment serving with it on the Mexican border in 1916 and 1917; served during World War I; commandant of the North Dakota Soldiers' Home; died in the Veterans Administration Center, Fargo, February 22, aged 84, of carcinoma of the stomach.

Frederick Walter Rice, New York; born in Winn, Maine, March 25, 1880; Columbia University College of Physicians and Surgeons, New York, 1906; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; formerly on the faculty of the New York University College of Medicine; served during World War I; affiliated with Holy Angels Hospital in Teaneck, N.J., Margaret Hague Memorial Hospital in Jersey City, Norwalk (Conn.) General Hospital, Bellevue and Doctors hospitals; died March 30, aged 68.

Arthur Ferdinand Cooper ⊕ Memphia, Tenn.; born Aug. 26, 1881; Vanderbilt University School of Medicine, Nashville, 1904; associate professor of medicine at the University of Tennessee College of Medicine; past president of the Memphis-Shelby Counties Medical Society; formerly secretary of the Mid-South Post Graduate Medical Assembly; served as editor of the *Memphis Medical Journal;* affiliated with John Gaston Hospital, Methodist Hospital, Veterans Administration Hospital and Baptist Memorial Hospital, where he died January 7, aged 66, of pneumonia.

Perry Watson Miles ⊕ Danville, Va.; born in Mathews, Va., Feb. 9, 1883; University College of Medicine, Richmond, 1908; formerly vice president of the Medical Society of Virginia; served as president of the Danville-Pittsylvania Academy of Medicine; member and chairman of the school board, for many years resident physician for the Southern Railway; chief of staff of the Danville Memorial Hospital; member of the draft board during World War II; died in Johns Hopkins Hospital, Baltimore, February 21, aged 65, of cerebral hemorrhage.

Rosier Davis Dedwylder, Cleveland, Miss.; born in 1882; University of Alabama School of Medicine, University, 1907; member of the American Medical Association; gave up his private practice in 1912 to work with the state board of health and the Rockefeller Foundation in a study of hookworm in the South; subsequently carried out investigation of malaria and malaria control; since 1920 director of the Bolivar County Health Department; died in the City Hospital February 20, aged 65, of coronary thrombosis.

Thomas McSwiney Barrett ⊕ Emsworth, Pa.; born in Emsworth, Pa., Dec. 31, 1881; Western Pennsylvania Medical College, Pittsburgh, 1906; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association and the Association of Military Surgeons of the United States; served during World War I; at various times associated with the Dixmont (Pa.) State Hospital, Suburban General Hospital, Bellevue, Veterans Administration Hospital in Knoxville, Iowa, and St. Francis Hospital in Pittsburgh, where he died March 27, aged 66, of carcinoma of the colon.

Thomas Edwin Neill ⊕ Washington, D. C.; Georgetown University School of Medicine, Washington, 1908; formerly on the faculties of the Georgetown University School of Medicine and the George Washington University School of Medicine; served during World War I; past president of the Medical Society of the District of Columbia and the Clinico-Pathological Society of Washington; formerly on the staffs of Emergency Hospital and Garfield Memorial Hospital, where he died February 22, aged 69, of coronary occlusion.

David Benjamin Martinez ⊕ Slidell, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1922; fellow of the American College of Surgeons; formerly associate professor of obstetrics at the University of Pittsburgh School of Medicine and on the staffs of the Magee and Presbyterian Hospitals in Pittsburgh; served on the staff of the New Biloxi (Miss.) Hospital; died in the Touro Infirmary, New Orleans, February 26, aged 49.

Michael Depta ⊕ Pittsburgh; born in Mount Pleasant, Pa., on May 8, 1889; University of Pittsburgh School of Medicine, 1917; assistant professor of laryngology and rhinology at his alma mater; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; served during World War I; affiliated with the Pittsburgh Hospital, Presbyterian Hospital and St. Francis Hospital, where he died February 2, aged 58, of coronary thrombosis.

Percival C. Barnes, University City, Mo.; St. Louis College of Physicians and Surgeons, 1906; member of the American Medical Association; died February 27, aged 73, of leukemia.

Charles Worcester Beaman, Cincinnati; Eclectic Medical Institute, Cincinnati, 1903; formerly on the faculty of his alma mater; served during World War I; died February 25, aged 67, of aortic aneurysm.

Joseph Napoleon Boyer Jr., Springfield, Mass.; Harvard Medical School, Boston, 1899; served during World War I; died in the Veterans Administration Hospital, Northampton, February 26, aged 72, of coronary thrombosis.

Robert Lee Bushart ⊕ Fulton, Ky.; University of Tennessee Medical Department, Nashville, 1901; past president of the Hickman and Fulton Counties Medical Society; affiliated with the Fulton Hospital; died February 22, aged 72, of coronary thrombosis.

Frank Hough Carber, New York; Columbia University College of Physicians and Surgeons, New York, 1912; formerly a fellow in medicine at the Mayo Foundation in Rochester, Minn.; served during World War I; at one time chief examiner for the Life Extension Institute; medical director of the Mutual Life Insurance Company; died February 28, aged 62, of heart disease.

Travis Carroll, Cincinnati; University of Louisville (Ky.) Medical Department, 1883; Medical College of Ohio, Cincinnati, 1891; died February 24, aged 86, of chronic myocarditis.

Sherman Cook, Attica, Ohio; Cleveland Medical College, Homeopathic, 1897; died in the Bucyrus City Hospital in Bucyrus February 19, aged 76, of pernicious anemia.

William J. Cummings, Alvarado, Texas; University of Texas School of Medicine, Galveston, 1909; past president of the Johnson County Medical Society; city health officer of Alvarado and local physician for the Missouri, Kansas and Texas Railroad; served as member of the school board and as alderman; died in a hospital at Fort Worth, February 11, aged 63, of pneumonia.

Martin Dalton, Fenton, Mo.; Marion-Sims College of Medicine, St. Louis, 1896; member of the American Medical Association; a director and one of the founders of the Farmers and Merchants' Bank; died February 28, aged 79, of pneumonia.

Spencer Cornelius Dickerson ⊕ Chicago; Rush Medical College, Chicago, 1901; formerly field health officer; served in France during World War I; on the staff of the Provident Hospital; died in the Albert Merritt Billings Hospital February 25, aged 77, of heart disease.

Boyd Dodson ⊕ Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1889; past president of the Luzerne County Medical Society; for many years member of the board of education; member of the staff of the Wilkes-Barre General Hospital; died March 19, aged 80, of acutedilatationof the heart.

Benjamin Adoneram Doggett ⊕ Norfolk, Va.; Medical College of Virginia, Richmond, 1915; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; president elect of the Norfolk County Medical Society; affiliated with the Norfolk General Hospital, where he died February 27, aged 55, of subarachnoid hemorrhage.

Franz Gill Edwards ⊕ Waldport, Ore.; Harvard Medical School, Boston, 1923; served during World War I; director of the Waldport Community Hospital; died February 2, aged 52, of pulmonary and cerebral hemorrhage.

Emily Hartman Emery, Vallejo, Calif.; Hahnemann Hospital College of San Francisco, 1897; at one time health officer of Emeryville; affiliated with the Juvenile Detention Home in Oakland; died February 21, aged 81, of carcinoma.

Thomas Luther Goodnight ⊕ Caldwell, Texas; University of Louisville (Ky.) Medical Department, 1913; past president of the Burleson County Medical Society; county health officer; served during World War I; member of the Selective Service Board during World War II; local physician and surgeon for the Santa Fe and Southern Pacific Railroads; died February 9, aged 59, of multiple myeloma.

Lawrence E. Heiges, Lompoc, Calif.; Northwestern University Medical School, Chicago, 1904; served as mayor of the city of Lompoc; formerly member of the Santa Barbara County Planning Commission; on the courtesy staff of the Santa Barbara Cottage Hospital in Santa Barbara; on the honorary retired staff of the Lompoc Hospital, where he died February 15, aged 73, of acute hepatitis.

Carrie S. Staines Kellogg ⊕ Fenwick, Mich.; American Medical Missionary College, Battle Creek, Mich.; and Chicago, 1899; for many years member of the staff of the Battle Creek Sanitarium in Battle Creek, member of the Michigan State Medical Society; died February 16, aged 80, of cerebral hemorrhage.

John William Ledbury ⊕ Uxbridge, Mass.; College of Physicians and Surgeons, Baltimore, 1905; an Affiliate Fellow of the American Medical Association; died February 20, aged 72.

Samuel Johnston McNeill ⊕ Chicago; Rush Medical College, Chicago, 1903; past president of the Northshore Branch of the Chicago Medical Society; at one time on the faculty of his alma mater; formerly associated with Augustana Hospital; died February 16, aged 73, of cerebral hemorrhage.

Joseph Henry Mitchell, Dillwyn, Va.; Baltimore Medical College, 1895; died in the Johnston-Willis Hospital, Richmond, February 11, aged 84.

John Archibald Nelson, San Francisco; University of California Medical School, San Francisco, 1892; died February 21, aged 82, of bronchopneumonia.

Manning Lionel Nelson, North, S. C.; Medical College of the State of South Carolina, Charleston, 1909; member of the American Medical Association; affiliated with the South Carolina Baptist Hospital in Columbia, where he died February 21, aged 64, of coronary thrombosis.

John Thomas Padgham, Grinnell, Iowa; State University of Iowa College of Medicine, Iowa City, 1909; member of the American Medical Association; for many years treasurer of the Powshiek County Medical Society; served on the school board; affiliated with St. Francis and Community Hospitals; died February 18, aged 71, of congestive heart failure.

Mary Elizabeth Beasley Poket, Hamilton City, Calif.; College of Physicians and Surgeons of San Francisco, 1903; died in the Enloe Hospital, Chicago, February 17, aged 77.

George Washington Potts, Los Angeles; Jefferson Medical College of Philadelphia, 1884; died February 21, aged 85, of cerebral hemorrhage.

Albert Lee Roberts, Tuscaloosa, Ala.; University of Tennessee College of Medicine, Memphis, 1913; specialist certified by the American Board of Psychiatry and Neurology, Inc.; served during World Wars I and II; affiliated with the Veterans Administration hospitals in Gulfport, Miss., and Tuscaloosa; died February 20, aged 59, of coronary thrombosis.

Abraham Harry Roller ⊕ Bristol, Vt.; University of Vermont College of Medicine, Burlington, 1935; served as secretary of the Addison County Medical Society; affiliated with Mary Fletcher Hospital, the Bishop De Goesbriand Hospital in Burlington and Porter Hospital, Middlebury; died February 12, aged 38, of coronary disease.

Homer Rogers, Bakersfield, Calif.; University of Southern California College of Medicine, Los Angeles, 1897; served during World War I; affiliated with the Kern General Hospital, where he died February 16, aged 72, of hypertension and heart disease.

Lonzo O. Rose, Parkersburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1901; member American Medical Association and the Radiological Society of North America, Inc.; chemist and bacteriologist for the city of Parkersburg for many years; served as president of the Academy of Medicine of Parkersburg; died in Cincinnati February 23, aged 70, of hypostatic pneumonia.

David Rosner, New York; Long Island College Hospital, Brooklyn, 1905; died January 28, aged 66.

Charles N. Schaefer ⊕ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1904; member of the Radiological Society of North America, Inc.; died February 2, aged 69, of coronary occlusion.

Frederick William Schilling, Louisville, Ohio; Ohio Medical University, Columbus, 1895; died February 20, aged 75.

Walter Sherwood, Brookline, Mass.; Harvard Medical School, Boston, 1896; died February 9, aged 74, of cerebral thrombosis.

James R. Stiewig, Kiowa, Okla.; Gate City Medical College, Dallas, Texas, 1907; died February 27, aged 75, of cerebral hemorrhage.

James Cornelius Sullivan ⊕ Buffalo; University of Buffalo School of Medicine, 1910; fellow of the American College of Surgeons; on the faculty of his alma mater; served during World War I; on the staffs of the Buffalo General, Children's and Deaconess hospitals; died February 2, aged 59, of cerebral hemorrhage.

Elmer Seth Tenney ⊕ Major, U. S. Army, retired, Seattle; Dartmouth Medical School, Hanover, N. H., 1897; entered the medical corps of the regular army in 1919 and retired Sept. 30, 1934; veteran of the Spanish-American War and World War I; died in Madigan General Hospital, Tacoma, January 24, aged 77.

Philip Percy Turner, Clayton, N.J.; Jefferson Medical College of Philadelphia, 1897; also a druggist; died February 26, aged 78.

Charles Manley Walters ⊕ Burlington, N.C.; University of Maryland School of Medicine, Baltimore, 1908; died in St. Leo's Hospital, Greensboro, February 18, aged 71, of a skull fracture received in an automobile accident

Cassius M. Clay Walters ⊕ Los Angeles; Rush Medical College, Chicago, 1892; served during World War I; died February 19, aged 78, of hypostatic congestion of the lungs

James Pendleton Webb, Durant, Okla.; Birmingham Medical College, 1915; member of the American Medical Association; died February 3, aged 58.

Agnes Ross Wilder ⊕ Atlantic, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1897; affiliated with the Atlantic Memorial Hospital; died February 17, aged 74, of heart disease.

August William Zillman, Keytesville, Mo.; Rush Medical College and Hospital, Chicago, 1897; American Medical Association; died February 12, aged 88.

KILLED IN ACTION

LIEUT. (JG) CLAUDE E. ARNETT JR.
(MC) U.S. NAVY, 1918-1945

COMDR. JAMES DANIEL BOONE
(MC) U.S. NAVY, 1903-1945

CAPT. MAYO W. ALBERT
M.C., A.U.S., 1914-1944

Claude Elias Arnett Jr., Acting Assistant Surgeon, Lieutenant (jg) U.S. Navy, Emporia, Kan.; University of Kansas School of Medicine, Kansas City, 1943; began active duty as lieutenant (jg) in the U.S. Navy in August 1943, serving an internship at the Naval Hospital in San Diego; killed in Iwo Jima Feb. 19, 1945, aged 27.

James Daniel Boone ⊕ Commander, U.S. Navy, Highland, Kan.; Northwestern University Medical School, Chicago, 1930; entered the U.S. Navy on July 1, 1929; interned at the U.S. Naval Hospital in San Diego; on surgical duty at the Canacao Naval Hospital at the time war started; when Manila capitulated he was taken prisoner and interned in Bilibid Prison there; cared for the interned army and navy personnel during the four years he was confined; sent to Japan on the ill-fated prison ship which left Manila on Dec. 13, 1944; awarded a citation posthumously; awarded the Legion of Merit Medal for his courageous work at Canacao and Sangley Point area during the bombings there; died Jan. 23, 1945, aged 42.

Mayo William Albert, Houston, Texas; University of Texas Medical Branch, Galveston, 1940; interned at St. Elizabeth Hospital in Dayton, Ohio; began active duty as a first lieutenant in the medical corps, Army of the United States, in August 1941; promoted to captain in January 1944 left for the European theater of war in the medical unit of a combat battalion attached to the 174 Engineering Regiment; killed in action on the Normandy Beachhead June 6, 1944, aged 30.

Louis Percy Kasman, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1928; member of the American Medical Association; interned at the Crown Heights Hospital in Brooklyn; began active duty as a captain in the medical corps, Army of the United States, Aug. 16, 1942; promoted to major; killed in action in Germany March 24, 1945, aged 42.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 15, 1948.

Second Plebiscite on National Health Service

Because of the concessions made by the Minister of Health the British Medical Association has held a second plebiscite of the whole profession on the government plan for a national health service. The result shows that 14,620 doctors approved and 25,842 disapproved. Though there is a large majority for disapproval, it has considerably diminished since the first plebiscite, which showed 40,814 disapproving and only 4,084 approving. Of general practitioners, 9,588 disapproved and 8,639 approved in this second plebiscite, a considerable advance in approval on the first plebiscite. Thus the 13,000 majority of general practitioners, which the British Medical Association laid down as necessary if the profession was to be advised to remain outside the act, was not attained.

The council of the medical association has issued a statement that the members of the profession should recognize that on some fundamental issues they have gained a substancial victory and must now prepare themselves by continued solidarity to strive for improvements by every means at their command. It appeals to those who have grave misgivings to accept the fact that an insufficient number of general practitioners share their view. The minister has appealed to the physicians to cooperate, and time has come for them so to do to the best of their ability, though with unrelenting vigilance. The council has accepted the minister's invitation to enter into discussions on the amending bill and other matters. His attention is being drawn to the large section of the profession still opposed to the national health service, and whose good will is necessary if it is to succeed. The council will report to the representative body that despite insufficiency of the safeguards to the profession's freedoms it should advise physicians to cooperate on the understanding that the minister will continue to negotiate on outstanding matters. The public should be informed that, for reasons outside the control of the medical profession, the new service cannot provide for some time all the improvements promised by the government. And so what at one time seemed a titanic struggle fizzes out in compromise, a typically English ending foretold in previous letters. There are some enlightened persons who regret that the issue of medical socialism was never fought as a matter of principle and that the English people will discover its evils only in the costly school of experience.

Improved Health of the Nation

The remarkable improvement in the health of the nation shown by vital statistics during and after the war continues. At a press conference held in London, the chief medical officer of the Ministry of Health, Sir Wilson Jameson, stated that last winter was the best England ever had as regards national health and that prospects for the coming summer were good. The general death rate for the three months ending March 31 (the worst period of the year) was easily the lowest ever known in England and Wales. The provisional figure was 12.3 deaths per thousand population, compared with a death rate of over 17 in the same period last year, which was one of the worst quarters ever known. The nearest approach in recent times to the remarkable figure of 12.3 was 13.2 in the first quarter of 1943. The number of deaths from influenza in the first quarter of 1948 was 644, against 2,796 in 1947 and 4,242 in 1946. This was the lowest figure recorded for that period.

Dr. W. H. Bradley, senior medical officer of the Ministry of Health, said that as a result of poliomyelitis last year the country was left with 3,000 cripples, but 2 of every 3 would overcome their handicap and live normal, useful lives. The epidemic was three times larger than any that had occurred previously in England and Wales. There were 7,800 cases and 700 deaths (9 per cent of the confirmed cases). Only one third of the patients were under 5 years of age. Eighteen per cent of those who died were between the ages of 35 and 45. The younger patients had a much better chance of survival than those in the upper age groups.

Sir William Jameson referred to the success of the immunization campaign against diphteria. Last year the number of deaths was 244. For every 10 children who died before the campaign for immunization only 1 dies now. The number of children who had diphtheria last year was 55,000 fewer than in 1938.

Students' International Clinical Congress

An international Clinical Congress of Medical Students, the first of its kind, will be held in Britain in July under the auspices of the British Medical Students' Association. So far one hundred and thirty delegates from thirty different countries have accepted the British invitation. A program of lectures, visits and ward rounds in various teaching hospitals, discussions, and entertainment for the visitors have been arranged to take place in the universities of London, Oxford and Birmingham. The organizational expenses have been met by grants from the British Medical Association and the International Union of Students. But the response to invitations shows that delegates from many countries have difficulty in meeting the necessary expense of attending. The British Council has generously agreed to cover the fee to the congress for a number of delegates, but many countries will have to remain unrepresented unless further support is forthcoming. An appeal has therefore been made by the honorary president of the congress, Professor J. A. Ryle, the president of the British Medical Students Association, S. Drancz, and the chairman of the Congress Organizing Committee, H. E. Reiss, for contributions from individual members of the public or from societies which have at heart the furtherance of friendship and understanding of students from all over the world to make the congress truly international in character. Contributions will be received by the Treasurer, Students' International Congress, British Medical Students Association, B.M.A. House, Tavistock Square, London, W. C. 1.

TURKEY

(From Our Regular Correspondent)

Ankara, May 18, 1948.

Turkey's Malaria Campaign

Although malaria control work has been under way twenty-five years, malaria remains the most prevalent of all preventable diseases in Turkey. At present there are malaria control administrative units in 52 of the 63 provinces, in 13,317 of the more than 40,000 villages and in 301 of the 472 districts. The control work has been divided into 40 zones where 293 specialist physicians, 1,117 malaria sanitary inspectors, 5 sanitary engineers and 2 technicians are employed. Every zone has a director, two bacteriologists and a number of physicians. Whether a region is to be included in

the campaign zone depends on the spleen and blood index; if it is not alarming responsibilities are delegated to health officers or municipalities. The zones are under supervision of three specialist district health officers. All graduating physicians are required to spend three months at the Adana Malaria Institute, where they take courses in malariology, parasitology, entomology, hematology and malaria pathology and engage in field work. A special law requires every able bodied peasant to give once a year five days of unpaid work on swamp draining. Serious cases of malaria are treated at the three twenty-bed ambulatory hospitals. This has greatly reduced the mortality rate. All treatments and medicines, quinine, quinacrine, pamaquine and others, are free and paid for from the government budget. Patients who cannot take quinacrine are given quinine; children are given quinine ethylcarbonate or quinine carbonate. The anti-mosquito work is carried on all the year round. Once a week habitations and stables are sprayed with a 5 per cent solution of DDT. Breeding places are sprayed with DDT diluted with crude oil. In some places Paris green or "velsicol" is used.

In his 1947 report to the ministry of Health, Dr. Seyfeddin Okan, director general of the malaria campaign division, stated that there has been no malaria epidemic in any of the malaria zones and that new cases of malaria have been few.

The climate in Turkey varies. While there are still heavy snows in the Northeast, mosquitoes are coming out in the subtropic South. The species encountered in Anatolia are Anopheles maculipennis, A. bifurcatus, A. algeriensis, A. hyrcanus, A. nigripens, A. eletus and A. superpictus. Though one type is generally confined to a certain region, one or two other types are often encountered in the same place, and in the Menderes River basin all seven types are present, though A. maculipennis and A. eletus are in the majority. However, in the Seyhan and Ceyhan basin A. maculipennis are rare and few. In the Sakarya plain A. maculipennis predominate; A. eletus are few and are found only in restricted areas. Although in the villages in the environs of Istanbul A. maculipennis is the only species and is present in great numbers, in one village of the same environs, the village of Kucuk Cekmece, at the border of a lake, A. eletus are also present.

According to research in 1934-1935 by Dr. Mahmud Sabit Akalin, director of the Adana Malaria Institute (1930-1936) in the malarial regions of Western Anatolia, the domestic anopheles are the maculipennis type, A. eletus and A. superpictus. A. bifurcatus are semidomestic; A. hyrcanus, A. algeriensis and A. nigripens are wild and prefer to feed on animals rather than on human blood. Of the A. maculipennis variety there are A. messeae, A. melanoon and A. typicus. In some parts of Anatolia where many persons suffer from chronic malaria there are no malaria epidemics; this bears out that the anopheles in those regions are of the zoophile and anthropophile types. Twenty years of research indicate that in Anatolia epidemics of malaria are spread by A. superpictus and eletus, and it is the latter in particular that spreads malaria in the Seyhan and Ceyhan plain. In the rice plantation districts of Asia Minor where three types of A. maculipennis predominate malaria epidemics are rare; in areas where A. eletus predominate from 30 to 50 per cent of the population is infected. The ten year statistics of the spleen and blood index in the Sakarya plain area indicate that in regions where the index is low A. maculipennis typicus predominate and in regions where the index is high A. eletus predominate.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, May 15, 1948.

Leishmaniasis of the Guinea Pig

Dr. Heitor Medina, of the Biological Institute of Curitiba, Parana, Brazil, described in 1946 for the first time a spontaneous infection of the guinea pig by a parasite of a new species which he called Leishmania enriettii. The original paper presented a study of the infection, which caused the appearance of skin tumors of infiltrative type, with a decided tendency to grow and finally to produce necrosis. In a recent paper a detailed study of the parasite was reported by Drs. Julio Muniz and Medina of the Oswaldo Cruz Institute.

The authors reproduce the disease in all the guinea pigs, by subcutaneous inoculation of material from lesions or from recently isolated cultures; guinea pigs from Europe and the United States were as receptive as those from Brazil. In 25 guinea pigs inoculated with the material it has not been possible to obtain either visceral lesions, as is the case with human and canine kala-azar, or ulcerative lesions of the mucous membranes as in the American tegumentary leishmaniasis. However, new lesions may appear on the skin in regions far from the point of inoculation, such as the forepaws, the ears and the genital organs. By scratching the lesions with its own contaminated nails the animal may cause infections at other points. Death during the infection is due in most cases to the invasion by bacteria. Morphologically the parasite displays peculiarities not yet found in other species of the same genus. Immunologically the guinea pig has only a low capacity of defense against the parasite, as demonstrated by the negative fixation reactions in different periods of the infection, the same results being obtained from cutaneous tests not only with L. enriettii but also with Leishmania brasiliensis antigens. L. enriettii antigen fixes complement strongly in the presence of serums from human subjects with American tegumentary leishmaniasis and causes positive reactions in the same persons when used in cutaneous tests.

Many attempts were made to infect with this species different mammals such as rhesus, hamster (Cricetus auratus), dog, white rat and mouse. Of all these animals, only 1 of 8 hamsters which were inoculated showed, at the end of six weeks, a small crusty formation in the inoculation point (the nasal region). The behavior of L. enriettii in regard to the hamster, rhesus, dog and white mouse, all of them animals susceptible to experimental infection by the species responsible for human leishmaniasis, and its inability to infect man, constitute a biologic difference that separates the organism from the human species.

The great receptivity to the infection shown by the guinea pig and the relatively short period of time in which the lesions appear render L. enriettii a choice material for chemotherapeutic studies. Following this idea the authors succeeded in the treatment and cure of the guinea pig leishmaniasis by antimonial compounds.

Study Miniature Roentgen Examinations

Dr. Heliodoro Costa, radiologist of the Health Center of the Fourth Sanitary District of Rio de Janeiro, published a study about 30,690 miniature roentgen examinations of the chest. This sanitary district is mainly residential in character, and its population includes persons of high as well as low economic condition. Of all the roentgenograms, 1,268 (4.1 per cent) revealed pathologic signs. Among them, 1,081 (3.5 per cent) revealed tubercu-

lous lesions, 951 (3.1 per cent) being of active tuberculosis and 124 (0.4 per cent) of inactive tuberculosis. The remaining 187 pathologic pictures included 138 nontuberculous pulmonary and pleural abnormalities and 49 thoracic abnormalities.

Brief Items

Drs. Hugo B. Firmeza and Zey Bueno, of the Ministry of Labor, have been appointed on the Committee of Health and Safety of the Work in Mines. The committee has been constituted to draft regulations to govern the mining industry, embodying the newest developments in hygiene and safety in this field. Dr. E. Magalhães Gomes has been appointed professor of clinical medicine at the University of Rio de Janeiro. Dr. Ernani Lopes resigned the post of director of the Gustavo Riedel Psychiatric Hospital. Dr. I. Cunha Lopes has been appointed to succeed Dr. E. Lopes.

Association of Methylene Blue and Sulfadiazine in Treatment of Blastomycosis

Dr. J. Pellegrino, of the Pharmacological Department, University of Minas Geraes, published a report of his work to test the influence of methylene blue on the in vitro action of sulfadiazine on Blastomycosis brasiliensis, the causative agent of South American blastomycosis. As a culture medium he used Sabouraud' glucose to which were added methylene blue in 1:400,000 concentration and sulfadiazine in concentrations from 5 to 40 per cent. The experiments were made with two samples of B. brasiliensis. The hundred and forty culture tubes were kept at room temperature and examined up to the thirty-fifth day after seeding. Dr. Pellegrino found that sulfadiazine in a 5 per cent concentration does not prevent and may even favor the development of the fungus. The inhibiting action of the combined medium is stronger than that of methylene blue alone in the same concentration. Methylene blue does not affect the action of sulfadiazine on the in vitro development of B. brasiliensis in efficient concentrations of the sulfonamide compound. The author strongly suggests the association of methylene blue with the sulfonamide drugs and the specific antimycotic vaccine.

Internal Blastomycosis

Dr. Oswaldo Paulo Forattini reports 2 cases of internal blastomycosis caused by Blastomyces brasiliensis localized in the pancreatic region, without apparent involvement of skin, mucous membranes or the superficial lymph nodes. The clinical picture may lead to the diagnosis of more commonly observed diseases such as neoplasms or tuberculosis. Biopsy will reveal the true nature of the ailment. Both patients were critically ill, but sulfadiazine acted remarkably well, having cured 1 of the patients (working regularly now more than ten months and feeling fine) while the other has improved considerably but is still under treatment.

MADRID

(From Our Regular Correspondent)

May 18, 1948.

Activities of the Neuropsychiatric Clinic

At the Neuropsychiatric Clinic of the Madrid General Hospital, whose present head is Dr. J. J. Lopez Ibor, there was much activity. Last year a course was given on advances in neuropsychiatry, in which the following lecturers spoke: R. Alberca on infections of the nervous system; F. Marco Merenciano on clinical history; J. Germain on clinical psychology; E. Escardo on advances in hypothalamus physiopathology; M. Peraita on avitaminosis and the nervous system, and J. Lopez Ibor on leukotomies and the frontal lobe. This year two courses are being given: one on neurologic and psychiatric examination by Drs. Olivares, Castilla, Leoz, Morillas y Heredia, Turina y Coullant, Urquiza, Guera, Land and Llopis, with intermediate talks by Professor Lopez Ibor; and the other, with Professor Lopez Ibor the only lecturer, on vital anguish and the thymopathic circle (basic principles of a psychosomatic pathology). There are fourteen talks in this course. Professor Ibor starts from the classic descriptions of Westphal's agoraphobia and defines a clinical picture made up of observations falling under different headings in psychiatry. The nuclear part of that entity is constituted by anguish; but, departing from the classic and psychoanalytic descriptions of the anguish neurosis, he does not look on this as such a neurosis--i.e., a state arising from a psychogenic cause or produced reactively--but as an endogenous condition. In studying the symptomatology of "thymopathics" he includes what he calls vital anguish, vertigo characteristic of agoraphobic persons and a series of somatic and vegetative disorders, among which he places disturbances of space and time perception, and these he subjects to preliminary phenomenologic analysis. He points out that in thymopathic sufferers 'pathic" space and time are deranged. The vegetative symptomatology is varied and curious: many conditions diagnosed as organic neuroses, the author says, really belong to this thymopathic morbid circle. He draws attention to the surprising association of these psychic conditions with a certain neurologic symptomatology, a fact which had not been pointed out before. Writer's cramp and spastic torticollis are both good examples of this. Vasovagal attacks do not belong to the epilepsy circle either, but to the thymopathic. This set of derangements must be connected with a disorder of the vital stratum of personality, widely conceived, seeing in it instinctive, somatic-visceral and affective components. He does not consider the vital stratum constituted solely by the vital feelings and thinks it better to speak of a "vital structure" than of a "vital stratum." Indeed the disturbances of the vital stratum constitute the "great thymopathic circle" in which the author includes: (*a*) endogenous melancholy and endogenous manias, in which the disturbance occurs around the vital sadness or cheerfulness pole; (*b*) anxious thymopathy, a syndrome in which disturbances occur around the vital anguish pole. (Lopez Ibor believes that vital anguish is not felt at the thought of death but rather at the possibility of the dissolution of personality and worry about this fact); (*c*) diencephalosis, that is vegetative derangements of central origin excluding those which accompany the conditions set forth in the previous paragraphs; and (*d*) certain forms of asthenia so far included in asthenic psychopathy or in constitutional neurasthenia.

These syndromes come on in phases. They are endogenous syndromes with a clear heredity, probably of the dominating type. The author advances the hypothesis that all these derangements may be related to derangements of the diencephalic regulations. This seems to find support in the studies of Hess, which prove the existence of a diencephalic motility with special characters: Hess obtains torticollis conditions in cats by means of diencephalic excitement. Research has proved that the diencephalon enters into the regulation of the psychic functions.

Lopez Ibor's investigations have been extended to the field of therapeutics. He has observed that psychotherapy plays an important, but small, part in anxious thymopathy, since this is a case of somatogenous derangement logically demanding somatic therapeutics. He obtains better results from treatment of patients by vegetative shocks (e.g., by intravenous administration of acetylcholine), and his experience in 1,500 cases supports this criterion.

POSTGRADUATE CONTINUATION COURSES FOR PHYSICIANS

Compiled by the Council on Medical Education and Hospitals for the Period July 1, 1948 to January 15, 1949

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ALLERGY		
Cook County Graduate School of Medicine 427 S. Honore St., Chicago	Allergy, One Day Each Week	10 weeks, part time Oct. 1948	$125.00
	One Month Personal Course in Allergy (2 of these courses under different instructors)	1 month, full time Every month	200.00
	Six Months Personal Course in Allergy (2 of these courses under different instructors)	6 months, full time By appointment	500.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Allergy Clinic and Conference	12 weeks, part time Sept. 20-Dec. 11, 1948	25.00
At: City of Detroit Receiving Hospital	Allergy Clinic and Conference	12 weeks, part time Dec. 13, 1948-Mar. 19, 1949	25.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Avenue, Brooklyn 16	Allergy	8 weeks, part time, Oct. 1948	30.00
At: Beth El Hospital			
At: Kings County Hospital	Allergy	8 weeks, part time Oct. 1948	20.00
American Academy of Allergy, 60 E. 58th St., New York	Orientation Course in Allergy	5 days, full time, Oct. 18-22, 1948	40.00
At: Chicago			
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Allergy in Children (Pediatrics PM-31)	1½ months, part time, Oct. 15-Dec. 3, 1948	30.00
At: Mount Sinai Hospital	Allergy (Medicine PM-31)	6 weeks, part time, Oct. 5-Nov. 30, 1948	40.00
At: Roosevelt Hospital	Clinical Allergy (Medicine PM-81)	2 weeks, full time, Nov. 8-20, 1948	120.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St. New York	Allergy	2 months, part time, Tuesdays - arranged	50.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#302-Allergy	Part time, Fridays Jan. 7-Feb. 25, 1949	25.00
	#331-Allergy	3 weeks, full time, Nov. 4-24, 1948	200.00
	#423-Allergy for Pediatricians[1]	5 days, full time, Oct. 4-8, 1948	75.00
University of Pittsburgh School of Medicine, Bigelow Boulevard, Pittsburgh, Pa.	Orientation Course in Allergy	10 Thursday afternoons Beg. Sept. 2, 1948	50.00
At: School of Medicine and Montefiore Hospital			
Graham-Thomas Clinic, 201 W. Franklin St., Richmond 20, Va.	Course of Training in Clinical Allergy	12 months, July 1, 1948, full time	None
	ANATOMY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Surgical Anatomy on the Cadaver	1 day each week for 10 weeks, part time, Oct. 1948	125.00
	Two week Course, Surgical Anatomy and Clinical Surgery	July 6, Aug. 16, Sept. 27, Oct. 25 and Nov. 22, 1948, full time	150.00

References will be found on page 749

Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ANATOMY—Continued		
University of Louisville School of Medicine, 101 West Chestnut St., Louisville 2, Ky. and Kentucky State Medical Association, 620 South Third Street, Louisville 2, Ky. At: Louisville General Hospital	Surgical Anatomy	Throughout the year - Thursdays, part time Except during July and August, 1948	Not given
University of Maryland School of Medicine, Lombard and Greene Streets, Baltimore 1	General Anatomy "A"	Arranged	Arranged according to time
	Surgical Anatomy "B"	2 days a wk.-3 hrs. a day Second Semester (1948) of school year	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Surgical Anatomy[2]	8 weeks, half time Sept. 7-Oct. 30, 1948	200.00
Tufts College Medical School, Postgraduate Division 30 Bennet Street, Boston 11 At: Ziskind Research Laboratory, New England Medical Center, Boston	Surgical Anatomy[1,3]	8 weeks, part time Nov. 1-Dec. 24, 1948	200.00[4] 5.00[5]
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Evolution of Human Body	12 weeks, Sept. 20-Dec. 11, 1948	25.00
	Human Inheritance	12 weeks, part time Sept. 20-Dec. 11, 1948	25.00
	Surgical Anatomy	24 weeks, part time, Dec. 13, 1948-June 18, 1949	70.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Review Course in Gross Anatomy	2 months, full time, Approx. July 1 to Sept. 8, 1948	150.00[4] 10.65[6]
Joint Committee on Post-Graduation Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Avenue, Brooklyn 16	Manikin	8 weeks, part time, Oct. 1948	30.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Anatomy of the Abdomen	100 hours, arranged	150.00
	Anatomy of the Thorax	100, hours, arranged	150.00
	Anatomy of the Urogenital System	130 hours, arranged	300.00
	Anatomy for the Orthopedic Surgeon	100 hours, arranged	150.00
	Applied Anatomy for the Anesthetist	125 hours, arranged	275.00
	Applied Anatomy for the General Surgeon	250 hours, arranged	375.00
	Applied Anatomy for the Otolaryngologist	150 hours, arranged	275.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Head and Neck Dissection	6 weeks, part time, arranged	150.00
New York Post-Graduate Medical School, 303 E 20th St., New York 3	General Anatomy	8 weeks, part time, arranged	100.00
	Surgical Anatomy of the Abdomen	Part time and full time - 12 weeks, 16 weeks and 8 weeks, arranged	150.00[7] 200.00[8] 225.00[9]
	Surgical Anatomy of the Female Pelvis	12 weeks, part time, arranged	150.00
	Surgical Anatomy of the Head and Neck	Part time and full time - 12 weeks, 16 weeks and 8 weeks, arranged	150.00[7] 200.00[8] 225.00[9]
	Surgical Anatomy of the Musculo-Skeletal System	Part time - 12 weeks and 16 weeks, arranged	150.00[7] 200.00[8]
	Surgical Anatomy of the Thorax and its Viscera	12 weeks, part time, arranged	150.00
	#241-Surgical Anatomy as Applied to Operative Gynecology[1]	Part time, arranged	200.00
	#522-Functional Anatomy in Relation to Orthopedics	Part time, Sept. 20-Oct. 1, 1948	75.00
New York University College of Medicine, 477 First Avenue, New York 16	General Anatomy	8 weeks, part time, arranged	100.00
	Surgical Anatomy of the Abdomen	Part time - 12 weeks, 16 weeks and 8 weeks, arranged	150.00[7] 200.00[8] 225.00[9]
	Surgical Anatomy of the Female Pelvis	12 weeks, part time, arranged	150.00
	Surgical Anatomy of the Head and Neck	Part time - 12 weeks, 16 weeks and 8 weeks, arranged	150.00[7] 200.00[8] 225.00[9]
	Surgical Anatomy of the Musculo-Skeletal System	Part time - 12 weeks, and 16 weeks, arranged	150.00[7] 200.00[8]
	Surgical Anatomy of the Thorax and its Viscera	Part time, 12 weeks, arranged	150.00
Western Reserve University School of Medicine, 2109 Adelbert Road, Cleveland 6, Ohio	Postgraduate Applied Anatomy, Dissection and Lectures	5 afternoons weekly for 2 to 6 months, Oct. 1, 1948 to April 30, 1949	70.00[10]
	ANESTHESIOLOGY		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County General Hospital	Course No. 754 - Anesthesia	12 weeks, part time, Sept. 1948	50.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ANESTHESIOLOGY—Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Personal Course in Ether and Nitrous Oxide (Inhalation) Anesthesia	1 month, full time, every month	125.00
	Personal Course in Ether, Nitrous Oxide, Ethylene and Cyclopropane (Inhalation) Anesthesia	1 month, full time, every month	200.00
	Personal Course in Spinal and Intravenous Anesthesia	2 weeks, full time, every two weeks	150.00
	Two Week Personal Course in Endotracheal Anesthesia	2 weeks, full time, every two weeks	150.00
University of Louisville School of Medicine, 101 West Chestnut Street, Louisville 2 and Kentucky State Medical Association, 620 S. 3rd St., Louisville 2 At: Louisville General Hospital	Anesthesiology	1 week, full time, Fall of 1948	Not Given
	Anesthesiology (Clinical Anesthesia)	Daily, part time, arranged	Not Given
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Boston City Hospital	Anesthesiology II	1 month, part time, arranged	60.00[4] 5.00[5]
	Anesthesiology III[1]	6 months, full time, arranged	300.00[4] 5.00[5]
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Anesthesia Theory and Practice	12 weeks, part time, every quarter	15.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Diagnostic and Therapeutic Nerve Blocking (Anesthesia PM-30)[1]	1 month, part time, Oct. 19-Nov. 19, 1948	50.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Clinical Anesthesiology	3 months, full time, arranged	200.00
	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics & Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, Oct. 1948	600.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Anesthesia	3 months, full time, Oct. 1, 1948	300.00
	Applied Anesthesia	3 months, full time, Oct. 1, 1948	300.00
	Applied Anesthesia	3 months, full time, Jan. 2, 1949	300.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#942-Anesthesia[1]	2 weeks, full time, Arranged	125.00 65.00[1]
New York University College of Medicine, 477 First Avenue, New York 16 At: N.Y.U. College of Medicine and Bellevue Hospital	Anesthesiology	6 months, full time, beginning Oct. 4, 1948	500.00
	Anesthesiology Regional	2 weeks, full time, Sept. 7-18, 1948	200.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Segmental Neuralgias; Relief by Regional Anesthesia	3 weeks, part time, 1st of each month, beginning October, 1948	200.00
	ARTHRITIS		
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Arthritis	8 weeks, part time, October, 1948	30.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#301-Arthritis and Allied Rheumatic Disorders	Tuesdays, part time, Jan. 4-Feb. 15, 1949	45.00
	#330-Arthritis and Allied Rheumatic Disorders	5 days, full time, Oct. 25-29, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital	Arthritis and Rheumatic Disorders	6 weeks, part time, Oct. 4-Nov. 11, 1948	100.00
	BACTERIOLOGY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Antibiotic Substances	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Bacteriology	3 months, half time, arranged	100.00
	Immunology	6 weeks, half time, arranged	50.00
	Parasitilogy	6 weeks, half time, arranged	75.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Practical Laboratory Instruction in Pathology and Bacteriology	Arranged	Arranged

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	BASIC SCIENCES		
College of Medical Evangelists, Graduate School of Medicine, Boyle and Michigan Avenues, Los Angeles 33	Basic Sciences (Gynecology and Obstetrics, Internal Medicine, General Surgery, Otolaryngology and Urology)	8 months, Oct. 4, 1948-June 10, 1949	Not Given
	Basic Sciences in Gynecology and Obstetrics	33 weeks, full time, Oct. 4, 1948 through June 10, 1949	700.00[4] 100.00[12] 250.00[13]
	Basic Sciences in Internal Medicine	33 weeks, full time, Oct. 4, 1948 through June 10, 1949	700.00[4] 125.00[12] 100.00[13]
	Basic Sciences in Otolaryngology	33 weeks, full time, Oct. 4, 1948 through June 10, 1949	700.00[4] 100.00[12] 300.00[13]
Indiana University School of Medicine, 1040 W. Michigan St., Indianapolis 7 At: Indiana Univ. Medical Center	Basic Science Course: Anatomy, Physiology, Pathology[14]	6 weeks, full time, beginning July 5, 1948	225.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Basic Sciences as Applied to Orthopedics	5 months, Sept. 2, 1948-Jan. 30, 1949	300.00
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1	Basic Science as Applied to Obstetrics and Gynecology[15]	20 weeks, full time, beginning 1st week in October, 1948	300.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Harvard Medical School and Massachusetts Eye and Ear Infirmary	Basic Sciences--Otolaryngology	8 months, full time, Oct. 1, 1948--May 31, 1949	900.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study At: University Hospitals, General Hospital, Veterans Hospital	Basic Sciences and Their Clinical Application	12 weeks, approximately Sept. 27 to Dec. 16, 1948	150.00[4] 10.65[6]
	Regular Basic Science and Clinical Courses	5 weeks, full time, (2nd Term)-July 26-Aug. 28, 1948	35.00[4] 6.00[6]
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Division of Graduate Studies, Basic Medical Sciences- Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, Oct. 1948	800.00[16] 600.00[16]
University of Oklahoma School of Medicine and University Hospitals, 800 N.E. 13th St., Oklahoma City 4	Basic Science	4 courses of 12 weeks, 2 times weekly, beginning Sept. 1948	None
University of South Dakota School of Medicine, Vermillion	(Basic Sciences)-1. Special Anatomy, 2. Clinical Biochemistry, 3. Clinical Microbiology, 4. Special Pathology, 5. Clinical Physiology	3 - 6 months, any time	None
Southwestern Medical College of Southwestern Medical Foundation, 2211 Oak Lawn, Dallas	Individual Postgraduate Work in the Basic Sciences	No set period, though usually 3 months, full time, Sept. 1948-June 1949	25.00[17]
University of Washington School of Medicine, Seattle 6	Applied Basic Science (Seminar Demonstration)[18]	Every Thursday evening, 2 to 3 hours	Not given
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	The Basic Sciences	6 months, Sept. 1948 to Feb. 1949	160.00[11]
	BIOCHEMISTRY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Physical Chemical Aspects of Biochemistry[1]	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	25.00
	Special Topics in Biochemistry	12 weeks, Dec. 13, 1948-Mar. 19, 1949	15.00
	CARDIOVASCULAR DISEASES		
California Heart Association, 45 Second St., San Francisco 5 At: San Francisco and Los Angeles	Annual Symposia on Cardiovascular Disease	3 days, San Francisco 2 days, Los Angeles Oct. 27-Nov. 1, 1948-S.F. Nov. 2-4, 1948-L.A.	15.00[20]
Los Angeles Heart Association, Los Angeles County Tuberculosis and Health Association, 117 W. 9th St., Los Angeles 15	Annual Postgraduate Symposium on Heart Disease	2 days, Nov. 4 and 5, 1948	15.00[5]
University Extension, University of California Medical School, Los Angeles 24	Cardiology	12 weeks, part time, Sept. 22-Dec. 8, 1948	50.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 732 - Cardiology and Vascular Diseases	12 months, full time, Beginning Sept. 13, 1948	1,000.00
	Course No. 733 - Cardiology	12 weeks, part time, Beginning Sept. 13, 1948	50.00
Chicago Medical Society, 30 N. Michigan Ave., Chicago 2 At: Thorne Hall, Northwestern University Medical School Campus	Cardiovascular and Respiratory Diseases	1 week, Sept. 20-25, 1948	50.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	CARDIOVASCULAR DISEASES—Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Cardio-Vascular Diseases	10 weeks, part time, Oct. 1948	80.00
	Electrocardiography and Heart Disease	10 weeks, part time, Oct. 1948	125.00
	Four Week Course in Electrocardiography and Heart Disease	4 weeks, full time, Sept. 13, 1948	175.00
	Two Week Course in Electrocardiography and Heart Disease	2 weeks, full time, Aug. 2, 1948	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Boston City Hospital	Cardiology	Oct. 27, 1948-Jan. 12, 1949, part time	75.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Electrocardiography and Clinical Cardiology	5 weeks, part time, Oct. 1948	30.00
At: Maimonides Hospital (Israel Zion Div.)	Clinical Cardiology and Advanced Electrocardiography	4 weeks, part time,	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Montefiore Hospital	Cardiology (Medicine PM-60)	8 months, once a week full time, Sept. 30, 1948-June 9, 1949	250.00
	Intermediate Cardiology (Medicine PM-61A)	4 months, part time, Sept. 28, 1948-Jan. 25, 1949	150.00
At: Mount Sinai Hospital	Cardiovascular Diseases (Medicine PM-31)	2 months, part time, Oct. 5-Dec. 7, 1948	125.00
	Bedside Clinics in Heart Disease (Medicine PM-46)	5 weeks, part time, Oct. 18-Dec. 6, 1948	30.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Cardiology	20 successive Wednesdays, May begin any Wednesday except during July & Aug.	150.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Diagnosis and Treatment of Diseases of the Heart	3 weeks, part time, arranged	75.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#303-Clinical Cardiology	Jan. 3-Feb. 21, 1949, part time	45.00
	#339-Cardiology	Full time, Nov. 8-12, 1948	55.00
	#424-Cardiology for Pediatricians	Full time, Dec. 6-10, 1948	75.00
New York University College of Medicine, 477 First Ave., New York 16 At: Beth Israel Hospital	Cardiovascular Diseases	12 weeks, part time, Sept. 30-Dec. 16, 1948	50.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Cardiology	5 days, full time, Oct. 25-29, 1948	50.00
American College of Physicians, 4200 Pine St., Philadelphia 4			
At: Emory University School of Medicine, Atlanta, Ga.	Cadiology	1 week, Dec. 6-11, 1948	30.00[21] 60.00[22]
At: Massachusetts Gen. Hosp., Boston	Recent Advances in the Diagnosis and Treatment of Cardiovascular Disease	1½ week, Nov. 15-24, 1948	45.00[21] 90.00[22]
At: National Institute of Cardiology, Mexico, D. F.	Cardiology	2 weeks August 2-13, 1948	60.00[21] 120.00[22]
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 and Philadelphia General Hospital	Cardiology	8 Thursdays, October, 1948	80.00
	Cardiology	8 Thursdays, January, 1949	80.00
Meharry Medical College, 1005 18th Ave. N. at Meharry Blvd., Nashville	Cardio-Renal Diseases	5 days, July 12-16, 1948	25.00
University of Wisconsin Medical School, 419 N. Randall Ave., Madison 6	Observation Course in Cardiology	5 days, full time December 1948	25.00
	CHEST DISEASES		
Council on Postgraduate Medical Education, American College of Chest Physicians, 500 N. Dearborn St., Chicago 10 At: University Medical Extension, University of California, San Francisco 22, and Stanford University School of Medicine, San Francisco	Diseases of the Chest	5 days, Sept. 13-17, 1948	50.00
At: Stevens Hotel, Chicago	Postgraduate Course in Diseases of the Chest	1 week, Sept. 20-25, 1948	50.00
Chicago Medical Society, 30 N. Michigan Ave., Chicago 2	Cardiovascular and Respiratory Diseases	1 week, Sept. 20-25, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honroe St., Chicago 12	Physical Examination of Chest	10 weeks, part time Oct. 1948	60.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Recent Advances in Diseases of the Chest	10 weeks, Wednesday evenings, Oct. 6-Dec. 8, 1948	50.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Pathology of Tuberculosis	12 weeks, Dec. 13, 1948-March 19, 1949	50.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
CHEST DISEASES—Continued			
American Trudeau Society, 1790 Broadway, New York At: University of Colorado School of Medicine, Denver, Colo.	Postgraduate Course in Thoracic Diseases	2 weeks, July 19-31, 1948	100.00[3]
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Bellevue Hospital	Tuberculosis and Diseases of the Chest (Medicine PM-80)	2 weeks, full time, October 11-23, 1948	50.00
At: Mount Sinai Hospital	Diseases of Chest (Medicine PM-37)	2 months, part time, Oct. 9-Dec. 4, 1948	60.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29 At: New York City Municipal Sanatorium Otisville, New York	Pulmonary Tuberculosis	3 weeks, full time, July 6-24, 1948	175.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#308-Acute and Chronic Diseases of the Chest	Thursdays, part time, Jan. 6-Feb. 24, 1949	45.00
Trudeau Foundation for the Clinical and Experimental Study of Pulmonary Disease, Saranac Lake, New York	Trudeau School of Tuberculosis	4 weeks, full time, Sept. 13-Oct. 9, 1948	100.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Diseases of the Chest	4 days, full time Nov. 29-Dec. 2, 1948	40.00
University of Virginia, Department of Medicine, Charlottesville	Diseases of the Chest	2 days, early Oct. 1948	10.00
DERMATOLOGY AND SYPHILOLOGY			
University Extension, University of California Medical School, Los Angeles 24, in cooperation with University Medical Extension, University of California, San Francisco 22 At: University Extension, Los Angeles	Dermatology	8 weeks, part time, Sept. 23-Nov. 11, 1948	40.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 760 - Dermatology and Syphilology	12 months, full time, October 1948	1,000.00
	Course No. 764 Management of Common Cutaneous Diseases	12 weeks, part time Sept. 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Dermatology	2 weeks, full time, every 2 weeks	75.00
	Formal Course in Dermatology	2 weeks, full time, beginning Oct. 4, 1948	100.00
	One Year Course in Dermatology	12 months, full time, by appointment	1,000.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Clinical Dermatology - "Refresher Course in Diseases of the Skin for General Practitioners"	1 week, full time, Nov. 8-13, 1948	50.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Massachusetts General Hospital	Dermatology	1 month, half time, Oct. 1948-Jan. 1949	75.00
	Dermatology and Syphilology	12 months, full time, July 1 and Oct. 1, 1948 and Jan. 1, 1949	750.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Boston Dispensary	Dermatology I	6 days, full time, Nov. 1-6, 1948	40.00[4] 5.00[5]
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich. At: City of Detroit Receiving Hospital	Dermatology Seminar	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Dermatology Seminar	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
	Superficial Mycoses	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	35.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Montefiore Hospital	Common Skin Diseases and Treatment (Medicine PM-68)	1 month, part time, Oct. 4-Nov. 5, 1948	40.00
At: Mount Sinai Hospital	Venereal and Skin Diseases (Medicine PM-40)	6 weeks, part time, Oct. 6-Nov. 24, 1948	30.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Dermatology and Syphilology	6 weeks, part time, First of any month	100.00
	Dermatology and Syphilology	3 months, part time, First of any month	200.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#1219-Seminar in Practical Dermatology and Syphilology	5 days, full time, Sept. 13-17, 1948	55.00
	#1232-Dermatology and Syphilology for Pediatricians[1]	5 days, full time, Sept. 27-Oct. 1, 1948	75.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Dermatology-Syphilology	2 to 12 months as arranged (Oct. to Sept. annually)	800.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Dermatology	5 days, full time, November, 1948	25.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	DIABETES		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Medical and Surgical Diabetes	10 weeks, part time, October, 1948	80.00
Harvard Medical School, Courses for Graduates 25 Shattuck St., Boston 15 At: New England Deaconess Hospital	Diabetes Mellitus in Relation to General Medicine	5 days, full time, Oct. 18-22, 1948	75.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Maimonides Hospital (Israel Zion Div.)	Complications of Diabetes Mellitus	12 weeks, part time, October, 1948	30.00
At: Jewish Hospital	Diabetes	8 weeks, part time, October, 1948	20.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#313-Diabetes Mellitus, Nephritis and Hypertension	Thursdays, part time, Jan. 6-Feb. 24, 1949	45.00
	#337-Diabetes Mellitus, Nephritis and Hypertension	5 days, full time, Dec. 13-17, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	Diabetes Mellitus	6 weeks, part time, Oct. 4-Nov. 11, 1948	50.00
American College of Physicians, 4200 Pine St., Philadelphia 4 At: New England Deaconess Hospital, Boston	Diabetes Mellitus and General Medicine	5 days, July 12-16, 1948	30.00[21] 60.00[22]
	ELECTROCARDIOGRAPHY		
University Extension, University of California Medical School, Los Angeles 24, in cooperation with University Medical Extension, University of California, San Francisco 22 At: University Extension, Los Angeles	Electrocardiography	3 weeks, part time, Jan. 5-20, 1949	25.00
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 734 - Electrocardiography	12 weeks, part time, Oct. 5, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Electrocardiography and Heart Disease	10 weeks, part time, October 1948	125.00
	Four Week Course in Electrocardiography and Heart Disease	4 weeks, full time, Sept. 13, 1948	175.00
	Personal Course in Electrocardiography and Heart Disease	2 weeks, full time, Aug. 2, 1948	150.00
	Two Week Course in Electrocardiography and Heart Disease	2 weeks, full time, Aug. 2, 1948	150.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Electrocardiography	2 weeks, full time, Aug. 16-Aug. 28, 1948	150.00
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville 2, Ky. and Kentucky State Medical Ass'n., Louisville 2 t: Louisville General Hospital	Electrocardiography	16 weeks, part time, August 1948	Not Given
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Pratt Diagnostic Hospital	Electrocardiography I	5 days, full time, Oct. 18-22, 1948	40.00[4] 5.00[5]
	Electrocardiography II[23]	3 days, full time Dec. 6-8, 1948	25.00[4] 5.00[5]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor At: University Hospital	Electrocardiographic Diagnosis	5½ days, full time, Aug. 30-Sept. 4, 1948	50.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich. At: Wayne County General Hospital, Eloise, Mich.	Electrocardiography	24 weeks, part time, Sept. 20, 1948-Mar. 19, 1949	30.00
	Beginning EKG	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Beginning EKG	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Maimonides Hospital (Israel Zion Div)	Clinical Cardiology and Advanced Electrocardiography	4 weeks, part time, October 1948	20.00
At: Jewish Hospital	Clinical Electrocardiography	5 weeks, part time, October 1948	30.00
	Electrocardiography and Clinical Cardiology	5 weeks, part time, October 1948	30.00
At: Beth El Hospital	Electrocardiography and Heart Sound Recording	5 weeks, part time, October 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Intensive Course in Elementary Electrocardiography (Medicine PM-41)	1 week, full time, Sept. 27-Oct. 2, 1948	60.00
	Intensive Course in Advanced Electrocardiography (Medicine PM-42).	3 days, full time, December 8-11, 1948	40.00

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Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
ELECTROCARDIOGRAPHY--Continued			
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Electrocardiography	2 weeks, part time, October 1948	100.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Electrocardiographic Interpretation	2 weeks, part time, arranged	75.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#345-Electrocardiography	5 days, full time, Nov. 15-19, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16	Electrocardiography	16 weeks, part time, Oct. 7, 1948-Jan. 20, 1949	75.00
At: Bellevue Hospital (4th Div.)	Practical Electrocardiography for the Practicing Physician	6 weeks, part time, Oct. 6-Nov. 9, 1948	65.00
At: Beth Israel Hospital	Electrocardiography	12 weeks, part time, Sept. 30-Dec. 16, 1948	40.00
ELECTROENCEPHALOGRAPHY			
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Clinical Electroencephalography and Electromyography (Neurology PM-2)[1]	Any three months between Oct. 1, 1948 and March 31, 1949, full time	150.00
At: Columbia-Neurological Institute			
At: Mount Sinai Hospital	Clinical Electroencephalography (Neurology PM-33)[1]	3 months, part time, Oct. 7, 1948-Jan. 20, 1949	60.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 and Pennsylvania Mental Hygiene Institute and Hospital for Nervous and Mental Diseases	Electroencephalography	2 or 4 weeks, as arranged	200.00 300.00
ENDOCRINOLOGY			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7	Course No. 735 - Endocrinology	12 weeks, part time, October 6, 1948	50.00
At: Los Angeles County Hospital			
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Diseases of the Endocrines:-Fundamental Physiology and Diagnostic Methods	10 days, full time Oct. 18-29, 1948	100.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Pediatric Endocrinology	1 week, full time, Oct. 4-9, 1948	75.00
At: Massachusetts General Hospital			
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Endocrinology	12 weeks, part time, Sept. 20-Dec. 11, 1948	35.00
	Experimental Endocrinology	12 weeks, Sept. 20-Dec. 11, 1948	35.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Endocrine Disorders in Children and Adolescents	8 weeks, part time, October 1948	20.00
At: Beth El Hospital	Disorders of the Endocrine System	6 weeks, part time, October 1948	40.00
At: Jewish Hospital	Female Sex Endocrinology	10 weeks, part time, October 1948	20.00
At: Jewish Sanitarium and Hospital for Chronic Diseases	Applied Endocrinology	5 weeks, part time, October 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Endocrinological Diseases (Medicine PM-39)	2 months, part time, Oct. 11-Dec. 6, 1948	30.00
At: Mount Sinai Hospital			
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Endocrinology	3 weeks, full time, December 1948	150.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#222-Gynecological Endocrinology	24 sessions, part time beginning Oct. 5, 1948	150.00
	#222-Gynecological Endocrinology	24 sessions, part time, beginning Jan. 4, 1949	150.00
	#309-Diseases of the Thyroid and Other Endocrine Glands and Disorders of Nutrition	Fridays, part time, Jan. 7-Feb. 25, 1949	45.00
Association for the Study of Internal Secretions, 1200 N. Walker St., Oklahoma City 3, Okla.	Endocrinology	Not given	Not given
At: Los Angeles, Calif.			
American College of Physicians, 4200 Pine St., Philadelphia 4	Endocrinology	1 week, Nov. 8-13, 1948	30.00[21] 60.00[22]
At: Thorne Hall, Northwestern University, Chicago			
ENDOSCOPY			
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Practical Cystoscopy	10 days, part time, every two weeks	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Endoscopy	2 months, arranged	250.00[24]
At: Massachusetts General Hospital			

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Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ENDOSCOPY—Continued		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Columbia-Presbyterian Medical Center	Gastroscopy (Medicine PM-2)[1]	2 months, part time, arranged	250.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Gastroscopy	2 weeks, part time, arranged	200.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#211-Cystoscopy and Endoscopy	15 sessions, part time, beginning Sept. 27, 1948	75.00
	#211-Cystoscopy and Endoscopy	15 sessions, part time, beginning Nov. 8, 1948	75.00
	#211-Cystoscopy and Endoscopy	15 sessions, part time, beginning Jan. 3, 1949	75.00
Temple University School of Medicine, 3400 N. Broad St., Philadelphia At: University Hospital and School of Medicine	Fall Postgraduate Courses in Bronchology and Esophagology	2 weeks, Sept. 27-Oct. 8, 1948	250.00
	Fall Postgraduate Courses in Bronchology and Esophagology	2 weeks, Oct. 25-Nov. 5, 1948	250.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Bronchoesophagology, Gastroscopy and Laryngeal Surgery	2 weeks, full time, beginning July 19, 1948	250.00
	Bronchoesophagology, Gastroscopy and Laryngeal Surgery	2 weeks, full time, beginning Sept. 13, 1948	250.00
	FRACTURES		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Fractures	10 weeks, part time, October 1948	125.00
	Fractures and Traumatic Surgery	2 weeks, full time, beginning Oct. 25, 1948	125.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Massachusetts General Hospital	Treatment of Fractures and Other Traumatic Conditions	10 days, full time, Sept. 20-30, 1948	150.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Fractures and Allied Trauma	3 weeks, full time, Fall semester	150.00
	GASTROENTEROLOGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Gastroenterology	10 weeks, part time, October 1948	100.00
	Two Week Course in Gastroenterology	2 weeks, full time, beginning Oct. 25, 1948	100.00
	Two Week Course in Gastroscopy and Gastroenterology	2 weeks, full time, beginning Nov. 8, 1948	200.00
	Two Week Personal Course in Gastroscopy and Gastroenterology	2 weeks, full time, beginning Sept. 27, 1948	200.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich. At: City of Detroit Receiving Hospital	Gastroenterology and Hematology Clinic	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Gastroenterology and Hematology Clinic	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Joint Committee on Post-Graduate Education Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Greenpoint Hospital	Gastroenterology	6 weeks, part time, beginning October 1948	20.00
At: Jewish Hospital	Gastroenterology	5 weeks, part time, beginning October 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Gastrointestinal Diseases (Medicine PM-32)	2 months, part time Oct. 6-Dec. 7, 1948	80.00
At: Montefiore Hospital	Gastroenterology (Medicine PM-62)	2½ months, part time, Nov. 9, 1948-Feb. 15, 1949	75.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Gastroenterology	1 month, part time, Fall 1948	100.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Gastroenterology	6 weeks, part time beginning Oct. 1, 1948	50.00
	Gastroenterology	6 weeks, part time, beginning Jan. 2, 1949	50.00
	Gastroenterology	3 months, part time, beginning Oct. 1, 1948	75.00
	Gastroenterology	3 months, part time, beginning Jan. 2, 1949	75.00
	Proctology, Gastroenterology, Operative Proctology (Cadaver)	6 weeks, part time, beginning Oct. 1, 1948	200.00
	Proctology, Gastroenterology, Operative Proctology (Cadaver)	6 weeks, part time, beginning Jan. 2, 1949	200.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#311-Gastroenterology	7 weeks, part time, Jan. 5-Feb. 23, 1949	45.00
	#343-Gastroenterology	10 days, full time, Nov. 29-Dec. 10, 1948	100.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	GASTROENTEROLOGY—Continued		
New York University College of Medicine, 477 First Ave., New York 16	Gastroenterology	8 weeks, part time, Sept. 27-Nov. 19, 1948	65.00
At: Beth Israel Hospital	Gastroenterology	8 weeks, part time, Winter, 1948	65.00
At: Lenox Hill Hospital	Gastroenterology	7 weeks, part time, Oct. 4-Nov. 19, 1948	60.00
Frank E. Bunts Educational Institute and Cleveland Clinic, Euclid Ave. at 93rd St., Cleveland, Ohio	Gastroenterology	2½ days, Oct. 7, 8, 9, 1948	10.00
American College of Physicians, 4200 Pine St., Philadelphia 4			
At: Graduate Hospital of the University of Pennsylvania	Gastroenterology	1 week, Dec. 6-11, 1948	30.00[21] 60.00[22]
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Clinical Gastroenterology	16 weeks, 500 hours, October 1948	400.00
	GENETICS AND ANTHROPOLOGY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Readings in Physical Anthropology	12 weeks, part time, Sept. 20-Dec. 11, 1948	25.00
	GERIATRICS		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Geriatrics (Medicine PM-47)	3½ months, part time, Oct. 7, 1948-Jan. 27, 1949	65.00
At: Mount Sinai Hospital			
	HEMATOLOGY		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7	Course No. 738 - Hematology	12 weeks, part time, beginning Jan. 3, 1949	50.00
At: Los Angeles County Hospital			
Chicago Medical Society, 30 N. Michigan Ave., Chicago 2	Hematology and Neurology	1 week, Sept. 13-18, 1948	50.00
At: Thorne Hall, Northwestern University Medical School Campus, Chicago			
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Hematology	10 weeks, part time, September 1948	100.00
	One Week Personal Course in Hematology	1 week, full time, beginning Oct. 4, 1948	100.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Hematologic Diagnosis	2 weeks, full time, Aug. 2-14, 1948	100.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11	Hematology I	6 days, full time, Oct. 25-30, 1948	40.00[4] 5.00[5]
At: Ziskind Research Laboratory, New England Medical Center			
Wayne University College of Medicine, 1516 St. Antoine St. Detroit, Mich.	Advanced Hematology	12 weeks, part time, Sept. 20-Dec. 11, 1948	50.00
	Advanced Hematology	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	50.00
	Beginning Hematology	12 weeks, part time, Sept. 20-Dec. 11, 1948	50.00
	Hematology Case Study	12 weeks, Sept. 20-Dec. 11 1948	15.00
	Hematology Case Study	12 weeks, Dec. 13, 1948-Mar. 19, 1949	15.00
At: City of Detroit Receiving Hospital	Gastroenterology and Hematology Clinic	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Gastroenterology and Hematology Clinic	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Clinical Hematology	8 weeks, part time, beginning October 1948	20.00
At: Jewish Hospital			
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32	Advanced Hematology (Medicine PM-67)	3 or 3½ months, part time, Sept. 23, 1948-Jan. 6, 1949	75.00
At: Montefiore Hospital	Clinical Hematology (Medicine PM-64)	4 months, part time, Sept. 14, 1948-Jan. 25, 1949	75.00
At: Mount Sinai Hospital	Hematology (Medicine PM-35)	2 months, part time, Oct. 11, 1948-Dec. 6, 1948	60.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Hematology	2 months, part time, arranged	50.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#306-Clinical Hematology	Wednesdays, part time, Jan. 5-Feb. 23, 1949	30.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	HEMATOLOGY—Continued		
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	Hematology	6 weeks, part time, Oct. 6-Nov. 10, 1948	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 and Bryn Mawr Hospital Laboratories	Clinical and Laboratory Hematology	6 weeks, beginning Oct. 1, 1948	200.00
	Clinical and Laboratory Hematology	6 weeks, beginning Dec. 1, 1948	200.00
Baylor University College of Medicine, 509 Lincoln Ave., Houston 1, Texas	Diseases of the Blood	3 to 4 days, full time, Nov. or Dec., 1948	25.00
	HISTOLOGY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Advanced Histology	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	35.00
	INTERNAL MEDICINE		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles, 7	Clinical Review of Internal Medicine (Course No. 730)	12 weeks, full time, Sept. 13, 1948	250.00
	Clinical Review of Internal Medicine (Course No. 730)	12 weeks, full time, Jan. 3, 1949	250.00
At: Los Angeles County Hospital	Internal Medicine (Course No. 731)	9 months, full time, January 1949	750.00
Emory University School of Medicine, 50 Armstrong St., Atlanta, Ga. At: Grady Memorial Hospital	Internal Medicine	2 weeks to 1 year, full time, arranged	125.00[25] 12.00[26]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Two week Course in Internal Medicine	2 weeks, full time, Oct. 11, 1948	75.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Application of Physiology and Biochemistry to Medicine	25 weeks, part time, Oct. 1, 1948-Mar. 3, 1949	150.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Internal Medicine	3 months, full time, Sept. 1, 1948-Nov. 30, 1948	375.00
At: Boston City Hospital	Internal Medicine	12 months, full time, Sept. 1, 1948	600.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Boston Dispensary	Clinical Medicine	4 weeks, mornings, arranged	60.00[4] 5.00[5]
At: Pratt Diagnostic Hospital	Internal Medicine	2 weeks, full time Oct. 4-16, 1948	75.00[4] 5.00[5]
	Internal Medicine (As related to Basic Sciences)	8 weeks, Jan. 3-Feb. 26, 1949	200.00[4] 5.00[5]
	Internal Medicine[27]	9 months, full time, Oct. 4, 1948-June 30, 1949	750.00[4] 5.00[5]
University of Michigan Medical School, 1313 E. Ann St., Ann Arbor At: University Hospital	Clinical Internal Medicine	Thursday afternoons throughout 1st semester, 1948	50.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Internal Medicine	To be announced	Not given
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Coney Island Hospital	Peripheral Vascular Diseases	8 weeks, part time, beginning Oct. 1948	20.00
At: Jewish Hospital	Hypertension and Nephritis	8 weeks part time, beginning Oct. 1948	20.00
	Peripheral Vascular Diseases	4 weeks, part time beginning Oct. 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Montefiore Hospital	Peripheral Vascular Diseases (Medicine PM-65)	4 months, part time. Sept. 23, 1948-Jan. 20, 1949	75.00
At: Mount Sinai Hospital	Symposium on Internal Medicine (Medicine PM-30)	8 weeks, full time, Oct. 5, 1948-Dec. 7, 1948	350.00
	Diseases of the Liver (Medicine PM-33)	2 months, part time, Oct. 5, 1948-Dec. 2, 1948	35.00
	Diseases of the Kidney (Medicine PM-34)	2 months, part time, Oct. 11, 1948-Dec. 6, 1948	15.00
	Diseases of Metabolism (Medicine PM-38)	2 months, part time, Oct. 7, 1948-Dec. 7, 1948	40.00
	Peripheral Vascular Disorders (Medicine PM-43)	5 weeks, Oct. 14, 1948 Dec. 8, 1948	40.00
	Relation of Skin to Internal Medicine (Medicine PM-69)	3 months, part time, Sept. 13, 1948-Dec. 27, 1948	40.00
Cornell University Medical College, 1300 York Ave., New York 21 At: Bellevue Hosp., Div. II	Graduate Course in Internal Medicine	6 months, full time, continuously	300.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	INTERNAL MEDICINE—Continued		
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Division of Graduate Studies, Basic Medical Sciences - Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
	Internal Medicine	1 month, full time, monthly except July and August	150.00
	Internal Medicine	2 months, full time,	300.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#300-Seminar In Internal Medicine	8 weeks, full time, Jan. 3-Feb. 25, 1949	300.00
	#307-Problems in Diagnosis (Internal Medicine)	Mondays, part time, Jan. 3-Feb. 21, 1949	45.00
	#310-Diseases of the Liver and Biliary Tract	Wednesdays, part time, Jan. 5-Feb. 23, 1949	30.00
	#315-Psychological Aspects of Internal Medicine	Fridays, part time, Jan. 7-Feb. 25, 1948	25.00
	#319-Peripheral Vascular Diseases	Tuesdays, part time, Jan. 4-Feb. 15, 1949	30.00
	#340-Peripheral Vascular Diseases	5 days, full time, Oct. 18-22, 1948	55.00
New York University College of Medicine, 477 First Ave., New York 16	Internal Medicine	4 weeks, part time, Sept. 27-Oct. 22, 1948	60.00
At: Bellevue Hospital	Internal Medicine	8 weeks, part time, Sept. 27-Nov. 19, 1948	00.00
At: Beth Israel Hospital	Internal Medicine	4 weeks, part time, Oct. 4-29, 1948	75.00
University of Cincinnati College of Medicine, Eden and Bethesda Aves., Cincinnati and American College of Physicians, 4200 Pine St., Philadelphia 4	Internal Medicine	6 days, Sept. 20-25, 1948	30.00[21] 60.00[22]
At: Cincinnati General Hospital			
American College of Physicians, 4200 Pine St., Philadelphia 4	Internal Medicine	2 weeks, Oct. 18-29, 1948	60.00[21] 120.00[22]
At: University of Michigan Medical School, Ann Arbor			
At: University of Cincinnati College of Medicine, Cincinnati, Ohio	Internal Medicine with Emphasis on Pathological Physiology	1 week September 13-18, 1948	30.00[21] 60.00[22]
At: University of Pittsburgh School of Medicine, Pittsburgh	Internal Medicine	2 weeks, Sept. 20-Oct. 2, 1948	60.00[21] 120.00[22]
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Internal Medicine	8 months, Oct. 1948 June, 1949	800.00
Dallas Southern Clinical Society, Medical Arts Bldg., Dallas 1, Texas and Dallas Academy of Internal Medicine	Metabolic Disorders	4 days, Sept. 21, 22, 23 and 24, 1948	25.00
Washington State Medical Association, 218 Cobb Bldg., Seattle	Post-Graduate Course in Internal Medicine	2 weeks, Sept. 13-25, 1948	25.00
At: King County Hospital			
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Medicine for Specialists[1]	Arranged	100.00[14]
	MALIGNANT DISEASES		
Los Angeles County Medical Association, 1925 Wilshire Blvd., Los Angeles 5	Cancer; Early Diagnosis	Twice a month, continuous 2 hours - irregular	None
At: Before Sections and Branches			
State of California, Department of Public Health, Chronic Disease Service, 751 Phelan Bldg., 760 Market St., San Francisco 2 in cooperation with Cancer Commission, California Medical Association	Cancer Symposia	Either 1 or 2 days, dates to be determined	None
At: Nonmetropolitan areas of the State			
Colorado State Medical Society, Rocky Mountain Cancer Foundation, Colorado Chapter of American Cancer Society, 535 Republic Bldg., Denver	Rocky Mountain Cancer Conference	2 days, full time, July 14 and 15, 1948	None
At: Denver			
National Cancer Institute, Bethesda 14, Md.	Traineeship in Diagnosis and Treatment of Cancer	1 to 3 years	None[28]
At: Various Hospitals throughout the country			
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Cytological Diagnosis of Cancer by the Papanicolaou Method	2 weeks, full time Sept. 20-Oct. 2, 1948	150.00
At: Massachusetts General Hospital			

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949— Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MALIGNANT DISEASES—Continued			
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Brooklyn Cancer Institute	Diagnosis and Treatment of Neoplastic Disease	8 weeks, part time, beginning Oct. 1948	30.00
Cornell University Medical College, 1300 York Ave., New York 21	Cytologic Diagnosis of Cancer	2 weeks, full time, Nov. 8-20, 1948	100.00
University of Oregon Medical School, 3181 S.W. Marquam Hill Rd., Portland 1, American Cancer Society	Diagnosis and Treatment of Diseases of Malignant Growths	September 27-October 1, 1948	Not given
Tennessee State Medical Association, Post-graduate Committee, 4 South Dunlap, University Center, Memphis 3 AT: 46 county seat towns as teaching centers	Cancer	10 weeks, part time, July 1, 1948-August 31, 1949	10.00, ?.50[29]
State Medical Society of Wisconsin, 917 Tenney Bldg., Madison 3, in cooperation with the Wisconsin Division of the American Cancer Society At: Fond du Lac, Wis.	Postgraduate Cancer Teaching Clinics	1 day, full time, July 15, 1948	Not given
At: Janesville, Wis.	Postgraduate Cancer Teaching Clinics	1 day, full time, July 20, 1948	Not given
At: LaCrosse, Wis.	Postgraduate Cancer Teaching Clinics	1 day, full time, July 19, 1948	Not given
At: Racine, Wis.	Postgraduate Cancer Teaching Clinics	1 day, full time, July 14, 1948	Not given
At: Stevens Point, Wis.	Postgraduate Cancer Teaching Clinics	1 day, full time, July 16, 1948	Not given
MEDICINE, GENERAL			
State Medical Societies of Six New England States (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut) At: Copley Plaza Hotel, Boston	New England Postgraduate Assembly	3 days, Nov. 3-5, 1948	2.00
Los Angeles County Medical Association, 1925 Wilshire Blvd., Los Angeles 5 At: North Hollywood and East Los Angeles	Practical Medicine Lecture Series	1½ hours weekly, each series, continuous - Series 1 every Wednesday; Series 2 every Tuesday	None
University Extension, University of California Medical School, Los Angeles 24, in cooperation with University Medical Extension, University of California, San Francisco 22 At: University Extension, Los Angeles	General Medicine	12 weeks, part time, Sept. 21-Dec. 7, 1948	50.00
California Medical Association, Postgraduate Activities Committee, 450 Sutter St., San Francisco 8 At: 15 Centers outside the Metropolitan Areas	Postgraduate Seminars (Extramural)	1 day full time, dates arranged	None
Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15	Postgraduate Review Courses in Medicine	5 days, Sept. 6-10, 1948	50.00
University Medical Extension, University of California, San Francisco 22 At: University of California Medical Center	Continuation Course in General Medicine	12 weeks, part time, probably Sept. to Dec. 1948	Not given
	General Medicine	12 evenings, Sept. 20 through Dec. 6, 1948	40.00
San Joaquin County Medical Society, Committee on Postgraduate Activities, Stockton, California	Stockton Post-graduate Study Club	8 Thursday evenings to be arranged through Sept., Oct. and Nov., 1948	10.00
Connecticut State Medical Society, 258 Church St., New Haven 10 and Yale University School of Medicine	Connecticut Clinical Congress	3 days, full time, September 1948	3.00
Medical Society of the District of Columbia, 1718 M St., N.W., Washington 6, D.C.	Nineteenth Annual Scientific Assembly	3 days, full time, Sept. 27-29, 1948	3.00
Graduate School of Medicine, University of Florida, 2033 Riverside Ave., Jacksonville, in cooperation with the Florida Medical Association and the Florida State Board of Health At: Duval County Hospital	Special Graduate Course	2 weeks, full time, Sept. 13-25, 1948	Not given
American Congress of Physical Medicine, 30 N. Michigan Avenue, Chicago 2 At: Hotel Statler, Washington, D. C.	Instruction Course (Ten Lectures Based Primarily on Physics and Physiology)	10 hours, Sept. 7, 8, 9 and 10, 1948	15.00[30] 2.00[31]
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Varicose Veins	2 weeks, part time, 1st and 3rd Wednesday of each month	40.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MEDICINE, GENERAL—Continued			
Educational Committee, Illinois State Medical Society, 30 N. Michigan Ave., Chicago. Miss Ann Fox, Secretary At: 10 Medical Councilor Districts	Postgraduate Conference (The first conference of the coming season will be Centralia, Marion County, September 16)	12 conferences for 1948-1949 season	
Mississippi Valley Medical Society, 209-224 W.C.U. Bldg., Quincy, Ill. At: Abraham Lincoln Hotel, Springfield, Ill.	Post-Graduate Medical Assembly for General Practitioners	3 days, Sept. 29-30 and Oct. 1, 1948	None
Indiana University School of Medicine, 1040 W. Michigan St., Indianapolis 7 At: Indiana University Medical Center	Review Course for General Practitioners	2 days, full time, Sept. 29-30, 1948	10.00[32]
St. Elizabeth Hospital, Lafayette, Ind. and Indiana University School of Medicine, 1040 W. Michigan St., Indianapolis 7 At: St. Elizabeth Hospital, Lafayette	Postgraduate Medical Education	1st Tuesday of each month, part time	None
Iowa State Medical Society, 505 Bankers Trust Bldg., Des Moines 9 At: Carroll, Iowa	Carroll County Postgraduate Course	Early Fall, 1948	Not given
American Roentgen Ray Society, University Hospital, Iowa City, Iowa At: Chicago	Instructional Courses	4 days, part time, Sept. 14-17, 1948	5.00[33] None[34]
State University of Iowa College of Medicine, University Campus, Iowa City	Physicians Clinical Conference General Medicine	5 days, Sept. 27-Oct. 1, 1948	None
	Physicians Clinical Conference General Medicine	5 days, Oct. 25-29, 1948	None
	Physicians Clinical Conference General Medicine	5 days, Nov. 22-26, 1948	None
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1 At: University Hospital and County Hospitals in Maryland	Post-Graduate Extension Lecture Series	Once a month, Oct. 1948-May 1949	15.00[35]
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Boston City Hospital	Medical Diagnosis and Treatment	Wednesdays, part time, Oct. 6, 1948-May 25, 1949	100.00
Lahey Clinic, 605 Commonwealth Ave., Boston 15 At: Clinic Auditorium	Informal Instruction (Lecture Meetings)	July to December 1948	None
	Medical Clinics	Tuesdays and Thursdays throughout the entire year	Not given
	Staff Meetings	8 months, part time, Oct. 1948-May 1949	Not given
	Two-Hour Clinical Symposium on General Clinical Subjects	Wednesday nights, throughout the year, Beginning Oct. 1, 1948	Not given
At: New England Baptist Hospital	Clinical Conferences	Saturdays at 11:00 a.m.	Not given
At: New England Deaconess Hospital	Clinical Conferences	Saturdays at 11:00 a.m.	Not given
Massachusetts Medical Society, 8 The Fenway, Boston At: Various Cities throughout Massachusetts	Post-graduate Extension Course	3 months, part time, Oct. 1-Dec. 31, 1948	None
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor At: University Hospital	Clinical Exercises for Practitioners	Wednesdays, throughout 1st semester, 1948	50.00
University of Michigan Medical School, Wayne University College of Medicine, Michigan Department of Health and Michigan State Medical Society At: Ann Arbor, Battle Creek, Bay City, Flint, Grand Rapids, Jackson, Lansing, Mt. Clemens, Saginaw, Traverse City, Saulte Ste. Marie, Marquette, Houghton and Ironwood, Michigan	Extramural Course	2 days in autumn, 1948, dates to be arranged later	None
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich. At: City of Detroit Receiving Hospital	Ward Rounds for Veterans	12 weeks, Summer quarter	Not given
At: Wayne County General Hospital, Eloise, Mich.		12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Diagnostic Conference	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Mississippi State Sanatorium, Sanatorium, Miss.	Post-graduate	2 weeks, to 6 months, throughout the year	None
Kansas City Southwest Clinical Society, 630 Shukert Bldg., Kansas City 6, Mo.	Annual Fall Clinical Conference	4 days, Oct. 4-7, 1948	15.00[36]
Omaha Mid-West Clinical Society, 1031 Medical Arts Bldg., Omaha 2, Nebraska	Sixteenth Annual Assembly	5 days, part time, Oct. 25-29, 1948	Registration fee only
University of Nebraska College of Medicine, 42nd St. and Dewey Ave., Omaha, Nebraska	Refresher Course for Practicing Physicians	4 days, Oct. 1948	25.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MEDICINE, GENERAL—Continued			
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Greenpoint Hospital	Radiobiological Foundations of Medicine and Public Health	10 weeks, part time, beginning October 1948	30.00
	Sterility	12 weeks, part time, beginning October 1948	20.00
University of Buffalo School of Medicine, Postgraduate Department, 24 High St., Buffalo	Course for General Practitioners	2 weeks, Sept. 6-18, 1948	60.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Course for General Practitioners	6 weeks, full time, beginning Oct. 1, 1948	100.00
	Course for General Practitioners	3 months, full time, beginning Oct. 1, 1948	200.00
	Course for General Practitioners	6 weeks, full time, beginning Jan. 2, 1949	100.00
	Course for General Practitioners	3 months, full time, beginning Jan. 2, 1949	200.00
Council of Rochester Regional Hospitals, 800 Reynolds Arcade Bldg., Rochester 4, N. Y. and Rochester General Hospital	Current Diagnostic Procedures[37]	5 days, full time, Fall, 1948	None
Radiological Society of North America, Inc., Medical Arts Bldg., Syracuse, New York At: San Francisco, California	Refresher Courses	6 days, part time, Dec. 5-10, 1948	3.00[38] 10.00[39]
University of North Carolina School of Medicine and Extension Division, Chapel Hill and North Carolina Division of the American Cancer Society At: Three or four centers in N. C.	Medical Postgraduate Extension Course	6 to 8 weeks, part time, Oct. to Dec. 1948 probably	20.00 30.00 30.00
University of Cincinnati College of Medicine, Eden and Bethesda Aves., Cincinnati, Ohio and Society of General Physicians, Cincinnati	General Medicine	1 month, twice weekly, Oct. and Nov. 1948	Not given
Ohio State University College of Medicine, 11th and Neil Aves., Columbus, Ohio	Postgraduate Course in General Medicine for General Practitioners	5½ days, Dec. 6-11, 1948	40.00
Oklahoma City Clinical Society, 512 Medical Arts Bldg., Oklahoma City	Oklahoma City Clinical Society Conference	4 days, full time, Oct. 25-28, 1948	15.00
American College of Physicians, 4200 Pine St., Philadelphia 4 At: New England Deaconess Hospital, Boston, Mass.	Diabetes Mellitus and General Medicine	5 days, July 12-16, 1948	60.00[22] 30.00[21]
Medical Society of the State of Pennsylvania, 500 Penn Ave., Pittsburgh At: Allentown	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 21 and 28; Oct. 12, 19 and 26, 1948	25.00[40]
At: Clearfield	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 23 and 30; Oct. 14, 21 and 28, 1948	25.00[40]
At: Erie	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 22 and 29; Oct. 13, 20 and 27, 1948	25.00[40]
At: Harrisburg	Graduate Education Institute of The Medicab Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 23 and 30; Oct. 14 and 28; Nov. 4, 1948	25.00[40]
At: Johnstown	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 23 and 30; Oct. 14, 21 and 28, 1948	25.00[40]
At: Lancaster	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 22 and 29; Oct. 13, 20 and 27, 1948	25.00[40]
At: Oil City	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 22 and 29; Oct. 13, 20 and 27, 1948	25.00[40]
At: Washington	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 22 and 29; Oct. 13, 20 and 27, 1948	25.00[40]
At: Wilkes-Barre	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 22 and 29; Oct. 13, 20 and 27, 1948	25.00[40]
At: Williamsport	Graduate Education Institute of The Medical Society of the State of Pennsylvania	5 weeks, 1 day a week, Sept. 22 and 29; Oct. 13, 20 and 27, 1948	25.00[40]
Anderson County Medical Society (Piedmont Postgraduate Assembly), Anderson, S. C.	Piedmont Post-Graduate Clinical Assembly	2 days, about Sept. 14 and 15, 1948	5.00
Medical College of South Carolina, Alumni Association, 16 Lucas St., Charleston	Alumni Post-Graduate Seminar	3 days, full time, Nov. 2, 3 and 4, 1948	15.00
Post-Graduate Medical Assembly of South Texas, 229 Medical Arts Bldg., Houston At: San Houston Coliseum and Music Hall	Post-Graduate Medical Assembly of South Texas	3 days, Dec. 7, 8 and 9, 1948	15.00
Interstate Postgraduate Medical Association of North America, 16 N. Carroll St., Madison, Wis. At: Public Auditorium, Cleveland, Ohio	Interstate Postgraduate Medical Association 33rd International Medical Assembly	4 days, full time, Nov. 9-12, 1948	5.00[5]

References will be found on page 749

Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
MEDICINE, GENERAL—Continued			
Jackson Clinic, 16 S. Henry St., Madison 3, Wis. At: Methodist Hospital	Post-Graduate	1 day monthly	None
State Medical Society of Wisconsin, 917 Tenney Bldg., Madison 3, Wis. At: Milwaukee, Wisconsin	Annual Meeting	3 days, full time, Oct. 4, 5 and 6, 1948	Not given
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6, Wis.	A Course for Practitioners of General Medicine	5 days, full time, October 1948	25.00
NEUROLOGY AND PSYCHIATRY			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 742 – Psychosomatic Medicine	12 weeks part time beginning Jan. 5, 1949	50.00
University Medical Extension, University of California, San Francisco 22 At: The Langley Porter Clinic, University of California Medical Center	Psychiatry and Neurology	12 weeks, full time, beginning Sept. 1948	200.00
At: University of California Medical Center	Psychiatry and Neurology	12 weeks, full time, Probably middle of Sept. to middle of Dec., 1948	To be announced
Catholic University of America, Department of Psychology and Psychiatry, Washington 17, D. C.	Child Psychiatry	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Clinical Psychology	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Introduction to Psychiatry	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Psychological Diagnosis	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Psychopathology	1 hour a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 12.50[4]
	Seminar in Psychotherapy I	2 hours a week, Oct. 1, 1948 to Jan 31, 1949	5.00[5] 25.00[4]
	Seminar in Psychotherapy III	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
At: St. Elizabeth's Hospital	Clinical Psychiatry	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Group Psychotherapy	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Individual Psychotherapy	2 hours a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 25.00[4]
	Psychosomatic Medicine	1 hour a week, Oct. 1, 1948 to Jan. 31, 1949	5.00[5] 12.50[4]
St. Elizabeth's Hospital, Nichols Ave., S. E., Washington 20, D. C.	Postgraduate Courses in Psychiatry and Neurology	4 months, part time, beginning Sept. 15, 1948	None
Chicago Medical Society, 30 N. Michigan Ave., Chicago 2 At: Thorne Hall, Northwestern University Medical School Campus, Chicago	Hematology and Neurology	1 week, Sept. 13-18, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Neurology	10 weeks, part time, October 1948	80.00
Institute for Psychoanalysis, 664 N. Michigan Ave., Chicago, Illinois Neuropsychiatric Institute, 912 S. Wood St., Chicago 12 At: Illinois Neuropsychiatric Institute	Psychosomatic Demonstrations	9 months, part time, Oct. 1948-June 1949	None
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16, Institute for Psychoanalysis, 664 N. Michigan Ave., Chicago At: Michael Reese Hospital	Psychopathological Demonstrations	9 months, part time, Oct. 1948–June 1949	None
State University of Iowa School of Medicine, University Campus, Iowa City	Psychiatric	1 year, full time, July 1, 1948–June 30, 1949	300.00
Topeka Institute for Psychoanalysis, 3617 W. 6th Ave., Topeka, Kan. At: The Menninger Clinic	Basic Concepts of Psychoanalysis	24 hours, weekly	Arranged
	Continuous Case Seminar (Group Control)	92 hours, weekly	Arranged
	Interpretation of Dreams–Part I and II	18 hours, weekly	Arranged
	Psychoanalytic Contributions to the Theory and Treatment of Psychoses	15 hours, weekly	Arranged
	Psychoanalytic Literature	46 hours, bi-weekly	Arranged
	Psychoanalytic Technique–Part II	18 hours, weekly	Arranged
	Scientific Methodology of Psychoanalysis	6 hours, weekly	Arranged
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville 2, Ky. and Kentucky State Medical Association, 620 S. 3rd St., Louisville 2 At: Louisville General Hospital	Neurology	Wednesdays, part time, throughout the year	Not given

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
NEUROLOGY AND PSYCHIATRY—Continued			
Commonwealth of Massachusetts, Department of Mental Health, Waltham	Postgraduate Seminar in Neurology and Psychiatry-Social and Special Psychiatry	Once a week, part time, Oct. 20-Dec. 15, 1948	None
At: Boston Psychopathic Hospital At: Metropolitan State Hospital, Waltham	Postgraduate Seminar in Neurology and Psychiatry-Review Course in Basic Neurology and Psychiatry	Once a week, part time, Oct. 15-Dec. 17, 1948	None
At: Walter E. Fernald State School, Waverley	Postgraduate Seminar in Neurology and Psychiatry-Pediatric Neuropsychiatry	Every other week, part time, Oct. 18-Dec. 13, 1948	None
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Problems in Neurology	12 weeks, part time, Sept. 20-Dec. 11, 1948	35.00
At: Childrens Center	Child Guidance Clinic	12 weeks, Sept. 20-Dec. 11, 1948	25.00
	Child Guidance Clinic	12 weeks, Dec. 13, 1948-March 19, 1949	25.00
At: City of Detroit Receiving Hospital	Neurologic Conference	12 weeks, Sept. 20-Dec. 11, 1948	15.00
	Neurologic Conference	12 weeks, Dec. 13, 1948-March 19, 1949	15.00
	Psychosomatic Conference	12 weeks, Sept. 20-Dec. 11, 1948	15.00
	Psychosomatic Conference	12 weeks, Dec. 13, 1948-March 19, 1949	15.00
At: Wayne County General Hospital, Eloise	Clinical Psychiatric Seminar	12 weeks, Sept. 20-Dec. 11, 1948	15.00
	Clinical Psychiatric Seminar	12 weeks, Dec. 13, 1948-March 19, 1948	15.00
	Neurologic Conference	12 weeks, Sept. 20-Dec. 11, 1948	15.00
	Neurologic Conference	12 weeks, Dec. 13, 1948-March 19, 1949	15.00
	Psychosomatic Conference	12 weeks, Sept. 20-Dec. 11, 1948	15.00
	Psychosomatic Conference	12 weeks, Dec. 13, 1948 March 19, 1949	15.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	Psychotherapy for General Physicians	2 weeks, full time, Sept. 20-Oct. 2, 1948	To be announced
New Jersey Neuropsychiatric Association, 82 Clinton Ave., Newark 5 and Rutgers University, New Brunswick	Neuropsychiatry for Specialists	15 weeks, part time Sept. 9-Dec. 23, 1948	100.00
Joint Committee on Post Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Child Psychiatry	10 weeks, part time beginning Oct. 1948	20.00
At: Jewish Sanitarium and Hospital for Chronic Diseases	Basis of Neural Function	8 weeks, part time, beginning Oct. 1948	20.00
	Clinical Neurology	8 weeks, part time, beginning Oct. 1948	20.00
American Institute for Psychoanalysis, 266 West End Ave., New York 23	Continuous Case Seminar[41]	10 weekly sessions, beginning Sept. 13, 1948	20.00
	Dream Seminar[41]	15 weekly sessions, beginning Sept. 16, 1948	30.00
	Problems in Patient Doctor Relationship[41]	10 weekly sessions, beginning Nov. 22, 1948	20.00
	Psychiatry and Psychoanalysis	15 weekly sessions, beginning Sept. 16, 1948	30.00
	Readings in Psychoanalysis Part II	15 sessions every other week, beginning Sept. 17, 1948	30.00
At: New School for Social Research	Introduction to the Rorschach Method of Personality Diagnosis	15 weekly sessions, beginning Sept. 15, 1948	17.50
	The Search for Inner Unity	15 weekly sessions, beginning Sept. 14, 1948	15.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Columbia-Neurological Institute	Neurology PM 2 (Clinical Electroencephalography and Electromyography)[1]	Any 3 months between Oct. 1, 1948 and Mar. 31, 1949 full time	150.00
At: Columbia-Presbyterian Medical Center	Neurology PM 1 (Advanced Neurology)[1]	3 months, full time, July 5-Oct. 2, 1948	150.00
	Neurology PM 1 (Advanced Neurology)[1]	3 months, full time, Oct. 5-Dec. 31, 1948	150.00
	Psychiatry PM 1 (Symposium on Neurology and Psychiatry)[1]	2 months, full time, Oct. 4-Dec. 10, 1948	250.00
At: Montefiore Hospital	Neurology PM 60 (Neuropsychiatry)	1 month, part time, Nov. 8-Dec. 4, 1948	75.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
NEUROLOGY AND PSYCHIATRY—Continued			
At: Mount Sinai Hospital	Neurology PM 31 (Practical Neuroanatomy and Neuropathology)	7 months, part time, Oct. 4, 1948-May 23, 1949	140.00
	Neurology PM 32 (Advanced Practical Neuroanatomy and Neuropathology)	7 months, part time, Oct. 7, 1948-May 26, 1949	100.00
	Neurology PM 33 (Clinical Electroencephalography)[1]	3 months, part time, Oct. 7, 1948-Jan. 20, 1949	60.00
	Psychiatry PM 30 (Psychiatry in General Medicine)	4½ months, part time, Sept. 21, 1948-Feb. 1, 1949	100.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St. New York 29	Comprehensive Course in Psychoanalysis	3 years, part time, session begins in Oct. 1948	500.00[42]
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#713-Neurological and Psychiatric Diagnosis and Treatment in General Practice	2 weeks, full time, Dec. 6-18, 1948	100.00
New York University College of Medicine, 477 First Ave., New York 16	Psychiatry and Neurology[43]	8 weeks, full time, Sept. 27-Nov. 19, 1948	250.00
At: N. Y. University College of Medicine and Bellevue Hospital	Psychology and Psychodynamics	3 months, part time, arranged	200.00
Philadelphia Psychoanalytic Institute, 111 N. 49th St., Philadelphia 39	Clinical Conferences on Problem Children	5 sessions, part time, Sept. 1948-June 1949	5.00
	Introduction to Child Psychiatry[45]	28 sessions, part time, Sept. 1948-June 1949	30.00
	Orientation Course on Normal Behavior	10 sessions, part time, Sept. 1948-June 1949	10.00
	Professional School Courses (On Theory, Therapeutic Applications and Practice of Psychoanalysis)[44]	Varies, Sept. 1948-June 1949	424.50
	Psychopathology of Childhood	11 sessions, part time, Sept. 1948-June 1949	11.00
	The Emotional Development of the Child	9 sessions, part time, Sept. 1948-June 1949	9.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Clinicobiologic Neurology and Psychiatry[46]	10 weeks, full time, October-December, 1948	300.00
	Neurology-Psychiatry	8 months, October 1948-June 1949	800.00
University of Texas Medical Branch, Post-graduate	Psychiatry for the General Practitioner	5 days, Nov. 1-6, 1948	25.00
NUCLEAR PHYSICS			
University Extension, University of California Medical School, Los Angeles 24, in cooperation with University Medical Extension, University of California, San Francisco 22 At: University Extension, Los Angeles	The Application of Nuclear Physics to the Biological and Medical Sciences[49]	3 weeks, full time, Aug. 2-20, 1948	350.00[47] 100.00[48]
Columbia University College of Physicians and Surgeons, 630 W. 168th St. New York 32 At: Mount Sinai Hospital	Introduction to Nuclear Physics for Physicians (Radiology PM 30)[1]	3 months, Oct. 1, 1948-Jan. 28, 1949	60.00
NUTRITION			
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Nutrition	1 month, arranged	150.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#309-Diseases of the Thyroid and Other Endocrine Glands and Disorders of Nutrition	Fridays, part time, Jan. 7-Feb. 25, 1949	45.00
OBSTETRICS AND GYNECOLOGY			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 753 - Obstetrics and Gynecology	2 weeks, full time, Oct. 1948	100.00
Chicago Maternity Center, 1336 S. Newberry, Chicago 8	Postgraduate Training in Obstetrics and Gynecology	4 months, staggered	None
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Obstetrics	4 weeks, part time, 1st Wednesday each month	80.00
	Two Weeks Obstetrics	2 weeks, full time, Sept. 27, 1948	150.00
	Office Gynecology	4 weeks, part time, Sept. 1, 1948	80.00
	Office Gynecology	4 weeks, part time, October 27, 1948	80.00
	Office Gynecology	4 weeks, part time, Nov. 24, 1948	80.00
	Operative Gynecology	4 weeks, part time, Sept. 2, 1948	80.00
	Operative Gynecology	4 weeks, part time,	80.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	OBSTETRICS AND GYNECOLOGY—Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12.—Continued	Operative Gynecology	October 28, 1948 4 weeks, part time, December 2, 1948	80.00
	Operative and Office Gynecology	2 weeks, full time, Sept. 13, 1948	150.00
	Operative and Office Gynecology	2 weeks, full time, October 11, 1948	150.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Gynecology and Surgery for the General Practitioner	25 weeks, part time, Oct. 1, 1948-Mar. 3, 1949	150.00
Indiana University School of Medicine, 1040 W. Michigan St., Indianapolis 7 At: Indiana University Medical Center	Refresher Course in Obstetrics and Gynecology	5 days, full time, Nov. 8-12 1948	10.00[32]
State University of Iowa College of Medicine, University Campus, Iowa City	Obstetrics and Gynecology	5 days, full time, early November 1948	25.00
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville 2, Ky. and Kentucky State Medical Association, 620 S. 3rd St., Louisville 2 At: Louisville General Hospital	Intensive Post-Graduate Refresher Training in Obstetrics and Gynecology	3 days, full time, June 7-9, 1948	25.00[38]
University of Maryland School of Medicine, Lombard and Greene Sts., Baltimore 1	Gynecology and Obstetrics "A"	12 weeks, full time, arranged	150.00
	Gynecology, Oncology and Female Urology	10 weeks, full time, arranged	125.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	Clinical Obstetrics	1 month, full time, October 1948	150.00
At: Boston Lying-In Hospital	Clinical Obstetrics	1 month, full time, November 1948	150.00
At: Free Hospital for Women, Brookline	Pathology of Obstetrics and Gynecology	Every Thursday, Jan. 6-May 26, 1949	150.00
	Gynecology	1 month, full time, July 1948	150.00
	Gynecology	1 month, full time, August 1948	150.00
	Gynecology	1 month, full time, September 1948	150.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn 1313 Bedford Ave., Brooklyn 16 At: Cumberland Hospital	Complications of Pregnancy	4 weeks, part time, beginning Oct. 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Margaret Hague Maternity Hospital, Jersey City, N.J.	Obstetrics PM 80 - Internship Training	3 months, full time, beginning 1st of each month except November and Dec.	350.00
	Obstetrics PM 81 - Observation Course	1 month, full time, beginning 1st of each month	100.00
At: Mount Sinai Hospital	Gynecology PM 30 - Recent Advances in Gynecology	5 days, full time, Dec. 13-18, 1948	65.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Obstetrics and Gynecology, Including Manikin Obstetrics and Cadaver Gynecology	2 months, full time, October 1, 1948	250.00
New York Post-Graduate Medical School 303 E. 20th St., New York 3	#200-Seminar in Gynecology	2 months, full time, beginning Oct. 4, 1948	300.00
	#200-Seminar in Gynecology	2 months, full time, beginning Jan. 3, 1949	300.00
	#201-Diagnosis and Office Treatment (Gynecology)	10 sessions, part time, Nov. 29-Dec. 20, 1948	50.00
	#202-Diagnosis and Office Treatment (Gynecology)	10 sessions, part time Nov. 30-Dec. 21, 1948	50.00
	#203-Diagnosis and Office Treatment (Gynecology)	15 sessions, part time, beginning Sept. 27, 1948	75.00
	#203-Diagnosis and Office Treatment (Gynecology)	15 sessions, part time, beginning Nov. 8, 1948	75.00
	#203-Diagnosis and Office Treatment (Gynecology)	15 sessions, part time, beginning Jan. 3, 1949	75.00
	#223-Vaginal Cytology[1]	8 weeks, part time, beginning Oct. 5, 1948	100.00
	#223-Vaginal Cytology[1]	8 weeks, part time, beginning Jan. 4, 1949	100.00
New York University College of Medicine, 477 First Ave., New York 16 At: Beth Israel Hospital	Gynecology	16 weeks, part time, Aug. 30-Dec. 17, 1948	250.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
OBSTETRICS AND GYNECOLOGY—Continued			
Oklahoma State Medical Association, 210 Plaza Court Bldg., Oklahoma City 1 and Oklahoma State Health Department At: County Seats and Larger Towns over State	Gynecology	10 weeks, 1 lecture a week, continuous until Jan. 14, 1949	15.00
University of Oklahoma School of Medicine and University Hospitals, 800 Northeast 13th St., Oklahoma City 4 At: Tulsa, Oklahoma	Postgraduate Course in Obstetrics	3 days, September 1948	25.00
At: State Medical School of Oklahoma, Oklahoma City	Postgraduate Course in Pediatrics and Postgraduate Course in Obstetrics	5 days, quartely	None
University of Oregon Medical School, 3181 S. W Marquam Hill Road, Portland 1	Gynecology	5 days, full time, Nov. 15-19, 1948	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Obstetrics and Gynecology	8 months, Oct. 1948-June 1949	800.00
Meharry Medical College, 18th Ave. North at Meharry Blvd., Nashville	Obstetrics and Gynecology	5 days, July 12-16, 1948	25.00[38] 25.00
Washington State Medical Association, 218 Cobb Bldg., Seattle At: King County Hospital	Post-Graduate Course in Obstetrics and Gynecology	1 week, Aug. 2-7, 1948	25.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Obstetrics and Gynecology for Specialists[1]	Arranged	100.00[10]
OPHTHALMOLOGY			
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 752 - Basic Course in Ophthalmology	4 months, full time, October 1948	600.00
University Medical Extension, University of California, San Francisco 22 At: University of California Medical Center	Ophthalmology	5 days, full time, Sept 6-10, 1948	To be announced
Graduate School of Medicine, University of Florida, 2033 Riverside Ave., Jacksonville At: Miami Beach, Florida	Midwinter Seminar in Otolaryngology and Ophthalmology	6 days, full time, Jan. 10-15, 1949	Not given
The Children's Memorial Hospital, 707 Fullerton Ave., Chicago 14	Neuro-Muscular Anomalies of the Eyes	1 week, full time, Fall of 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Advanced Course in Refraction Methods[1]	4 weeks, full time, October 25, 1948	275.00
	Ocular Fundus	1 week, full time, Nov. 1948	75.00
	Two Weeks Course in Ophthalmology[1]	2 weeks, full time, Sept. 20, 1948	200.00
Northwestern University Medical School, 303 E. Chicago Ave., Chicago 11	Basic Ophthalmology begginning October 1948	8 months, full time,	800.00
University of Illinois College of Medicine, 1853 W. Polk St., Chicago At: Illinois Eye and Ear Infirmary	Post-Graduate Course in Ophthalmology	8 months, full time Oct. 4, 1948-May 27, 1949	600.00[50]
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Ophthalmology	10 months, July 1, 1948-April 30, 1949	500.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Harvard Medical School and Massachusetts Eye and Ear Infirmary	Basic Sciences in Ophthalmology	3 months, full time, Sept. 27-Dec. 31, 1948	400.00
	Clinical Ophthalmology	1 month, full time, January 3-29, 1949	150.00
Tufts College Medical School, Postgraduate Division 30 Bennet St., Boston 11 At: Boston City Hospital	Neuro-Ophthalmology	2 weeks, part time, Nov. 8-20, 1948	75.00[4] 5.00[5]
	Ophthalmology	1 month, part time, October 4-29, 1948	75.00[4] 5.00[5]
	Ophthalmology	1 month, part time, January 10-Feb. 4, 1949	75.00[4] 5.00[5]
At: Boston Dispensary	Ophthalmoscopy	1 month, part time, November 1-26, 1948	50.00[4] 5.00[5]
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Basic Ophthalmology	5 months, Sept. 20, 1948-February 20, 1949	300.00
American Academy of Ophthalmology and Otolaryngology, 100 First Ave. Bldg., Rochester, Minnesota	Ophthalmology and Otolaryngology (Home Study Courses)	September 1948 to May 1949	10.00
At: The Palmer House, Chicago	Annual Meeting of the Academy (Lectures on Various Subjects in Ophthalmology and Otolaryngology)	October 10-15, 1948	1.50[51]

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	OPHTHALMOLOGY—Continued		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Ophthalmology PM 30 - Slit Lamp Microscopy of the Living Eye[1]	7 weeks, part time, Oct. 6-Nov. 24, 1948	30.00
	Ophthalmology PM 31 - Ophthalmic Surgery[1]	2 months, part time, Oct. 6-Dec. 8, 1948	90.00
	Ophthalmology PM 32 - Refraction and Extraocular Muscles[1]	2½ months, part time, Oct. 8-Dec. 24, 1948	80.00
	Ophthalmology PM 34 - Histopathology of the Eye[1]	2½ months, part time, Oct. 11-Dec. 30, 1948	55.00
	Ophthalmology PM 35 - Bacteriology of the Eye and External Diseases[1]	2½ months, part time, Oct. 11-Dec. 27, 1948	45.00
	Ophthalmology PM 36 - Embryology of the Eye[1]	1½ month, part time, Oct. 6-Nov. 24, 1948	40.00
	Ophthalmology PM 37 - Physiological Optics[1]	2 months, part time, Oct. 11-Dec. 13, 1948	45.pp
	Ophthalmology PM 38 - Ophthalmoscopy[1] (Advanced Course)	2½ months, part time Oct. 7-Dec. 23, 1948	40.00
	Ophthalmology PM 39-A - Ophthalmoscopy in General Practice	2½ months, part time Sept. 20-Dec. 6, 1948	25.00
	Ophthalmology PM 39-B - Ophthalmoscopy in General Practice	2½ months, part time Sept. 23-Dec. 16, 1948	25.00
	Ophthalmology PM 40 - Techniques of Systematic Examination of the Eye and Functional Testing[1]	2½ months, part time Sept. 22-Dec 8, 1948	25.00
	Ophthalmology PM 42 - Medical Ophthalmology	2 months, part time Oct. 18-Dec. 14, 1948	25.00
New York Polyclinic Medical School and Hospital, 345 W. 50 St., New York 19	Clinical Otolaryngology and Ophthalmology	6 weeks, full time, October 1, 1948	100.00
	Clinical Otolaryngology and Ophthalmology	3 months, full time, October 1, 1948	150.00
	Clinical Otolaryngology and Ophthalmology	6 weeks, full time, January 2, 1949	100.00
	Clinical Otolaryngology and Ophthalmology	3 months, full time, January 2, 1949	150.00
	Eye, Ear, Nose and Throat, Including Cadaver Courses and Refraction	3 months, full time, October 1948	600.00
	Ophthalmology	6 weeks, part time October 1, 1948	50.00
	Ophthalmology	3 months, part time October 1, 1948	75.00
	Ophthalmology	6 weeks, part time January 2, 1949	50.00
	Ophthalmology	3 months, part time January 2, 1949	75.00
	Ophthalmology, Including Operative Ophthalmology (Cadaver) and Refraction	3 months, part time October 1, 1948	275.00
	Ophthalmology, Including Operative Ophthalmology (Cacaver) and Refraction	3 months, part time January 2, 1949	275.00
	Ophthalmology and Otolaryngology, Including Cadaver Courses and Refraction	3 months, full time October 1, 1948	600.00
	Ophthalmology and Otolaryngology, Including Cadaver Courses and Refraction	3 months, full time January 2, 1949	600.00
	Otolaryngology and Ophthalmology	9 months, full time October 1, 1948	1000.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#1413 - Motor Anomalies of the Eye[1] (Part I)	6 days, full time, October 18-23, 1948	100.00
	#1414 - Motor Anomalies of the Eye[1] (Part II)	5 days, full time, October 25-29, 1948	75.00
	#1417 - Ophthalmic Neurology[1]	5 days, part time, November 1-5, 1948	50.00
	#1419 - Surgery of the Eye[1]	6 days, full time, November 8-13, 1948	100.00
	#1421 - Differential Diagnosis with the Slit Lamp[1]	5 days, part time, November 1-5, 1948	50.00
New York University College of Medicine, 477 First Ave., New York 16 At: New York Eye and Ear Infirmary	Operative Eye Surgery[1]	1 month, part time, October 1948	100.00
	Refraction[1]	2 months, part time, October 1948	100.00
University of Rochester School of Medicine and Dentistry, 260 Crittenden Blvd., Rochester 7, New York	Sixteenth Summer Graduate Course in Ophthalmology	4 days, full time, July 19-22, 1948	40.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Ophthalmology	8 months, October 1948-June 1949	800.00
Virginia Society of Ophthalmology and Otolaryngology, University Station, Charlottesville, Va. At: University of Virginia Hospital	Post-Graduate Course in Ophthalmology and Otolaryngology	4 days, Nov. 3 and Dec. 1, 1948[52] - Dec. 2-3, 1948[53]	25.00[54] 15.00[55]

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	ORTHOPEDIC SURGERY		
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Hospital for Joint Diseases	Orthopedic Surgery PM 80 - Survey of the Essentials of Orthopedics	2½ months, 1 day a week, Oct. 7-Dec. 23, 1948	100.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#500 - Seminar in Orthopedic Surgery[1]	10 days, full time, January 3-14, 1949	125.00
	#520 - Orthopedics in General Practice	6 days, full time, November 15-20, 1948	60.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Orthopedics	8 months, October 1948-June 1949	800.00
	Orthopedics	12 months, October 1948-September 1949	1000.00
	OTOLARYNGOLOGY		
Graduate School of Medicine, University of Florida, 2033 Riverside Ave., Jacksonville At: Miami Beach, Florida	Midwinter Seminar in Otolaryngology and Ophthalmology	6 days, full time, January 10-15, 1949	Not given
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Two Weeks Course in Otolaryngology[1]	2 weeks, full time, October 1948	200.00
Northwestern University Medical School, 303 E. Chicago Ave., Chicago 11	Audiology and End-Aural	1 month, full time, October 1948	500.00
	Otologic Surgery Basic Otolaryngology	9 months, full time, October 1948	800.00
	Fenestration Surgery[56]	2 months, full time, November 1948	500.00
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Otolaryngology	10 months, July 1, 1948-April 30, 1949	500.00
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Harvard Medical School and Massachusetts Eye and Ear Infirmary	Otolaryngology - Basic Sciences	8 months, full time, Oct. 1, 1948-May 31, 1949	900.00
American Academy of Ophthalmology and Otolaryngology, 100 First Ave. Bldg., Rochester, Minnesota	Ophthalmology and Otolaryngology (Home Study Courses)	September 1948 to May 1949	10.00
At: The Palmer House, Chicago	Annual Meeting of the Academy (Lectures on Various Subjects in Ophthalmology and Otolaryngology)	October 10-15, 1948	1.50[51]
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Columbia-Presbyterian Medical Center	Otolaryngology PM 1 - Bronchoscopy[1]	3 weeks, part time, Oct. 11-29, 1948	250.00
At: Mount Sinai Hospital	Otolaryngology PM 30 - Histopathology of the Ear[1]	6 weeks, part time, Oct. 19-Nov. 26, 1948	50.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Clinical Otolaryngology	6 weeks, part time, October 1, 1948	75.00
	Clinical Otolaryngology	3 months, part time, October 1, 1948	100.00
	Clinical Otolaryngology	6 weeks, part time, January 2, 1949	75.00
	Clinical Otolaryngology	3 months, part time, January 2, 1949	100.00
	Clinical Otolaryngology and Ophthalmology	6 weeks, full time, October 1, 1948	100.00
	Clinical Otolaryngology and Ophthalmology	3 months, full time, October 1, 1948	150.00
	Clinical Otolaryngology and Ophthalmology	6 weeks, full time, January 2, 1949	100.00
	Clinical Otolaryngology and Ophthalmology	3 months, full time, January 2, 1949	150.00
	Ophthalmology and Otolaryngology Including Cadaver Courses and Refraction	3 months, full time, October 1, 1948	600.00
	Ophthalmology and Otolaryngology Including Cadaver Courses and Refraction	3 months, full time, January 2, 1949	600.00
	Otolaryngology and Ophthalmology	9 months, full time, October 1, 1948	1000.00

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Postgraduate Courses for Practicing Physicians—Jyly 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	OTOLARYNGOLOGY—Continued		
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#600 - Diagnostic Procedures in Otolaryngology	Sections A, B and C, (12 sessions each, part time) by arrangement	40.00[58]
	#620 - Symposium on Otolaryngology	10 days, full time, November 8-20, 1948	150.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Otolaryngology	8 months, October 1948-June 1949	800.00
Virginia Society of Ophthalmology and Otolaryngology, University Station, Charlottesville At: University of Virginia Hospital	Post-Graduate Course in Ophthalmology and Otolaryngology	4 days, Nov. 3 and Dec. 1, 1948[52] Dec. 2-3, 1948[53]	25.00[54] 15.00[55]
	OTORHINOLARYNGOLOGY		
Georgetown University School of Medicine, 3900 Reservoir Road, N.W., Washington, D.C. At: Georgetown Medical Center	Intensive Graduate Course-Otorhinolaryngology	2 weeks, dates indefinite	150.00
State University of Iowa College of Medicine, University Campus, Iowa City	Otolaryngology-Rhinology-Otology	5 days, full time, Nov. 29, 30-Dec. 1, 2 and 3, 1948	50.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Eye, Ear, Nose and Throat, including Cadaver Courses and Refraction	3 months, full time, October 1948	600.00
	PATHOLOGY		
University Extension, University of California Medical School, Los Angeles 24, in cooperation with University Medical Extension, University of California, San Francisco 22 At: University Extension, Los Angeles	Surgical Pathology	12 weeks, part time, Sept. 22-Dec. 8, 1948	50.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Gross Pathology	1 month, full time, every month	150.00
	Gross Pathology	12 months, full time, by appointment	500.00
	Gross and Microscopic Pathology	Hourly basis, by appointment	To be arranged
	Pathology and Laboratory Medicine	10 weeks, part time, October 1948	100.00
	One Month Course - Surgical Pathology	4 weeks, full time, every month	250.00
	Surgical Pathology One Day Each Week	10 weeks, part time, October 1948	100.00
	Two Weeks Course in Surgical Pathology	2 weeks, full time, every two weeks	150.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Pathologic Diagnosis	10 weeks, part time, Oct. 13-Dec. 15, 1948	50.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Neuropathology	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	50.00
	Pathology of Bone and Joint Diseases	12 weeks, Dec. 13, 1948-March 19, 1949	50.00
	Pathology of Heart and Blood Vessels	12 weeks, Sept. 20-Dec. 11, 1948	50.00
	Pathology of Parasitic Diseases	12 weeks, Dec. 13, 1948-March 19, 1949	50.00
	Surgical Pathology	12 weeks, part time, Sept. 20-Dec. 11, 1948	50.00
	Urologic Pathology	12 weeks, Sept. 20-Dec. 11, 1948	50.00
At: City of Detroit Receiving Hospital	Medical Pathologic Conference	12 weeks, part time every quarter	15.00
	Pathology Review	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Pathology Review	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
At: Wayne County General Hospital, Eloise	Medical Pathologic Conference	12 weeks, part time, every quarter	15.00
	Pathology Review	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Pathology Review	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Pathology PM 30 - General and Special Pathology	3½ months, part time, Oct. 2, 1948-Jan. 22, 1949	60.00
New York Medical College, Flower and Fifth Avenue Hospitals, 26 E. 105th St., New York 29	Clinical Pathology	26 hours, arranged	100.00
	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
	Pathology	16 weeks, half time, arranged	200.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PATHOLOGY—Continued		
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Practical Laboratory Instruction in Pathology and Bacteriology	Arranged	Arranged
New York University College of Medicine, 477 First Ave., New York 16 At: Lenox Hill Hospital	Histopathology for Gynecologists	6 weeks, part time Oct. 12-Nov. 19, 1948	50.00
	Pathology for Surgeons	6 weeks, part time, Oct. 11-Nov. 18, 1948	50.00
University of Texas Medical Branch, Post-graduate Division, 912 Avenue B., Galveston	Tumors of Skin and Head and Neck	4 days, Nov. 15-20, 1948	20.00
Baylor University College of Medicine, 509 Lincoln Ave., Houston 1	Pathology Course	6 months, part time, beginning July 1, 1948	120.00[47] 40.00[57]
	PEDIATRICS		
Arkansas State Board of Health, Little Rock, University of Arkansas School of Medicine, 1309 McAlmont St., Little Rock and Arkansas Medical Society, Fort Smith At: Little Rock	Pediatric Seminar	3 days, 16 hours Nov. 4,5,6, 1948	None
University Extension, University of California Medical School, Los Angeles 24, in cooperation with University Medical Extension, University of California, San Francisco 22 At: University Extension, Los Angeles	Pediatrics	6 weeks, part time, Sept. 20-Oct. 25, 1948	25.00
Children's Memorial Hospital, 707 Fullerton Ave., Chicago 14	Postgraduate Course in Pediatrics	1 month, full time, October 4, 1948	100.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Course in Pediatrics	2 weeks, full time, every two weeks	60.00
	Twelve Months Clinical Course in Pediatrics	12 months, full time, July 1, 1948	750.00
Indiana University School of Medicine, 1040 W. Michigan St., Indianapolis 7 At: Indiana University Medical Center	Refresher Course in Pediatrics	5 days, full time, Nov. 15-19, 1948	10.00[32]
University of Louisville School of Medicine, 101 W. Chestnut St., Louisville 2, and Kentucky State Medical Association, 620 S. 3rd St., Louisville 2 At: Louisville General Hospital	Intensive Postgraduate Refresher Training in Pediatrics	3 days, full time, June 10-12, 1948	25.00[38]
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15 At: Children's Hospital	Pediatrics	4 months, full time, Sept. 7-Dec. 31, 1948	500.00
	Pediatrics	4 months, full time, Jan. 3-April 28, 1949	500.00
At: Massachusetts General Hospital	Pediatrics	Monthly, full time, Oct. 1948 through April 1949	150.00[10]
	Pediatrics	8 months, full time, Oct. 1, 1948-May 31, 1949	800.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Boston Floating Hospital	Clinical Pediatrics	4 weeks, part time, Nov. 29-Dec. 24, 1948	60.00[4] 5.00[5]
	Pediatrics	2 weeks, full time, Nov. 29-Dec. 11, 1948	75.00[4] 5.00[5]
University of Michigan Medical School, Department of Postgraduate Medicine, 1313 E. Ann St., Ann Arbor At: University Hospital	Pediatric Clinical Conferences	Wednesday afternoons throughout 1948 except during July and August	None
Washington University School of Medicine, Kingshighway and Euclid Ave., St. Louis 10, Mo.	A two Month's Refresher Course in Pediatrics	2 months, September through November 1948	200.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Beth El Hospital	Clinical Pediatrics	5 weeks, part time, beginning October 1948	30.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Pediatrics PM 30 - Clinical Pediatrics	9 weeks, part time, Oct. 5-Dec. 14, 1948	80.00
	Pediatrics PM 31 - Allergy in Children	1½ months, part time, Oct. 15-Dec. 3, 1948	30.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Clinical Pediatrics	1 month, all year, full time	150.00
	Clinical Pediatrics	3 months, all year, full time	250.00
	Clinical Pediatrics	6 months, all year, full time	450.00
	Clinical Pediatrics	9 months, all year, full time	650.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PEDIATRICS—Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12.—*Continued*	Division of Graduate Studies-Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#410-Clinical Pediatrics	4 weeks, full time, Oct. 11-Nov. 6, 1948	150.00
	#410-Clinical Pediatrics	4 weeks, full time, January 3-29, 1949	150.00
	#413-Practical Clinical Pediatrics	4 weeks, full time, Nov. 8-Dec. 4, 1948	125.00
	#415-Review of Clinical Pediatrics	6 days, full time, November 15-20, 1948	60.00
New York University College of Medicine, 477 First Ave., New York 16 At: Beth Israel Hospital At: Lenox Hill Hospital	Pediatrics	12 weeks, part time, Sept. 28-Dec. 17, 1948	75.00
	Pediatrics	8 weeks, part time, Sept. 28-Nov. 19, 1948	50.00
Council of Rochester Regional Hospitals, 800 Reynolds Arcade Bldg., Rochester 4, New York, Strong Memorial Hospital and University of Rochester Medical School. At: Strong Memorial Hospital	Pediatrics[37]	1-2 months, Fall, 1948	None
Southern Pediatric Seminar, Saluda, N. C.	Southern Pediatric Seminar (28th Annual Session)	2 weeks, July 5-17, 1948	25.00
University of Oklahoma School of Medicine, and University Hospitals, 800 N. E. Thirteenth St., Oklahoma City 4	Postgraduate Course in Pediatrics	3 days, Dec. 6-8, 1948	25.00
University of Oklahoma School of Medicine, and University Hospitals, 800 N. E. Thirteenth St., Oklahoma City 4 and State Department of Health, 3400 N. Eastern, Oklahoma City 5 At: State Medical School of Oklahoma	Postgraduate Course in Pediatrics and Postgraduate Course in Obstetrics	5 days, quarterly	None
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Pediatrics	8 months, October 1948-June 1949	800.00
University of Texas Medical Branch, Postgraduate Division, 912 Avenue B., Galveston	Pediatrics	1 week, Nov. 8-13, 1948	25.00
Washington State Medical Association, 218 Cobb Bldg., Seattle At: Children's Orthopedic Hospital	Post-Graduate Course in Pediatrics	1 week, Aug. 9-14, 1948	25.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Pediatrics for Specialists[1]	Arranged	100.00[10]
	PHARMACOLOGY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Survey of Pharmacology	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	PHYSICAL MEDICINE		
Graduate Division of the School of Medicine, University of Southern California, Los Angeles 7 At: Los Angeles County Hospital	Course No. 775 - Principles of Physical Medicine	12 weeks, full time, September 1948	250.00
	Course No. 779 - Advanced Clinical Practice in Physical Medicine	12 months, full time, September 1948	1000.00
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Physical Medicine	10 weeks, part time, October 1948	125.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Physical Medicine PM 30 - Physical Therapy in General Practice	4 months, part time, Oct. 5, 1948-Feb. 1, 1949	
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Physical Medicine	4 weeks, arranged	100.00
New York University College of Medicine, 477 First Ave., New York 16 At: Bellevue Hospital and Institute of Rehabilitation	Rehabilitation and Physical Medicine	12 weeks, full time, by arrangement	200.00
	Rehabilitation and Physical Medicine	24 weeks, full time, by arrangement	400.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Physical Medicine	8 months, October 1948-June 1949	800.00
	PHYSIOLOGICAL CHEMISTRY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Physiological Chemistry Seminar	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Physiological Chemistry Seminar	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00

[1] References will be found on page 789

Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PHYSIOLOGY		
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Survey of Physiology	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Physiology PM 30 - Physiology of the Digestive Tract	2 months, part time, Oct. 6-Dec. 10, 1948	40.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Physiology and Chemistry of the Gastrointestinal Tract, Digestion	1 month, arranged	150.00
	Physiology of Respiration	1 month, arranged	75.00
	Physiology of the Cardio-Vascular System and Blood	1 month, arranged	75.00
	Physiology of the Endocrine System	1 month, arranged	75.00
	Physiology of the Nervous System	2 weeks, arranged	50.00
	Physiology of the Special Senses	1 month, arranged	75.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#304-Normal and Pathological Physiology: Functional and Chemical Aspects	Wednesdays, part time, Jan. 5 - Feb. 23, 1949	30.00
	#342-Normal and Pathological Physiology: Functional and Chemical Aspects	10 days, full time, October 4-15, 1948	100.00
	POLIOMYELITIS		
Georgia Warm Springs Foundation, Warm Springs, Ga.	Care of Acute and Convalescent Poliomyelitis	1 week, October 4, 1948	None
	Care of Acute and Convalescent Poliomyelitis	1 week, January 3, 1949	None
D. T. Watson School of Physical Therapy, Leetsdale, Pa.	Recent Advances in Treatment of Poliomyelitis	4 days, arranged	None
	PROCTOLOGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Proctoscopy	3 weeks, part time, Aug. 20 - Oct. 1, 1948	50.00
Tufts College Medical School, Postgraduate Division, 30 Bennet St., Boston 11 At: Boston Dispensary and Mt. Auburn Hospital, Cambridge	Proctology I[59]	6 days, full time, October 25-30, 1948	40.00[4] 5.00[5]
	Proctology II	1 month, full time, Nov. 1-27, 1948	250.00[4] 5.00[5]
At: Boston Dispensary and Associated Clinics	Proctology III[59]	1 month, part time, Sept. 27 - Oct. 23, 1948[60]	100.00[4] 5.00[5]
	Proctology III[59]	1 month, part time, Nov. 29 - Dec. 24, 1948[60]	100.00[4] 5.00[5]
	Proctology III[59]	1 month, part time, January 3-29, 1949[60]	100.00[4] 5.00[5]
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Hospital	Proctology	6 weeks, part time, beginning October 1948	40.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Proctology	6 weeks, part time, October 1, 1948	75.00
	Proctology	6 weeks, part time, January 2, 1949	75.00
	Proctology (Clinical)	6 weeks, part time, October 1948	75.00
	Proctology, Gastroenterology, Operative Proctology (Cadaver)	6 weeks, part time, October 1, 1948	200.00
	Proctology, Gastroenterology, Operative Proctology (Cadaver)	6 weeks, part time, January 2, 1949	200.00
New York University College of Medicine, 477 First Ave., New York 16	Proctology	8 weeks, part time, Oct. 4 - Nov. 26, 1948	125.00
	PUBLIC HEALTH		
United States Public Health Service, Hot Springs National Park, Arkansas and Arkansas State Board of Health At: USPHS Medical Center, Hot Springs National Park	Eleventh Postgraduate Course in the Clinical Management and Public Health Control of the Venereal Diseases	3 weeks, full time, Fall 1948	None
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Tropical Medicine and Public Health Leading to the Degree of Master of Public Health (Tropical Medicine)	9 months, Sept. 2, 1948 to May 30, 1949	500.00
Johns Hopkins University School of Hygiene and Public Health, 615 N. Wolfe St., Baltimore, Md.	Public Health (Note; Specialized training courses in Venereal Diseases, Mental Hygiene, Maternal and Child Health, Hospital Administration)	8 months, full time, Oct. 4, 1948 - May 28, 1949	600.00[40]

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued.

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	PUBLIC HEALTH—Continued		
University of Michigan School of Public Health, 109 S. Observatory St., Ann Arbor	Public Health (Public Health Administration and Epidemiology, Venereal Diseases, Tuberculosis, Maternal and Child Health and Industrial Health)	4 months, Sept. 20, 1948-January 17, 1949	Not given
University of Minnesota School of Public Health, Minneapolis 14	Course for Health Officers	9 months, full time, Sept. 27, 1948 - June 1949	Not given
New York State Department of Health, 76 State St., Albany 7 and Albany Medical College, 47 New Scotland Ave., Albany 3	Extension Course for Health Officers Grade II[61]	1 year, monthly - entrance at any time	38.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16	Radiobiological Foundations of Medicine and Public Health	10 weeks, part time, beginning October 1948	30.00
University of North Carolina School of Public Health, Chapel Hill, N.C.	Public Health	9 months, Sept. 1948-June 1949	100.00[25]
Ohio State Department of Health, 306 Ohio Depts. Bldg., Columbus 15 At: Oberlin, Ohio	Field Training, Orientation and Public Health Administration	1 month, special arrangement	None
	RADIOLOGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Roentgenology	2 weeks, full time, 3rd Monday of each month	70.00
	Diagnostic Radiology	8 months, arranged	500.00
	#1 Diagnostic Roentgenology	2 weeks, full time, 1st Monday of each month	125.00
	One Month Course - Clinical Roentgenology	4 weeks, full time, 3rd Monday of each month	125.00
	Radiation Therapy	2 weeks, full time, every two weeks	110.00
	Radiation Therapy	4 weeks, full time, every month	200.00
	Radiation Therapy	2 months, full time, every month	300.00
	Twelve Months Course - Radiology	12 months, full time, arranged	750.00
	X-Ray Interpretation	10 weeks, part time, September 1948	80.00
University of Louisville, School of Medicine, 101 W. Chestnut St., Louisville 2, Ky. and Kentucky State Medical Association, 620 S. Third St., Louisville 2 At: Louisville General Hospital	Radiology	13 weeks, part time, September 1948	Not given
Harvard Medical School, Courses for Graduates, 25 Shattuck St., Boston 15	General Radiology	1 month, full time, October 1948 through March 1949	150.00
At: Boston City Hospital			
At: Children's Hospital	Pediatric Radiology[62]	1 month, full time, monthly	150.00
At: Massachusetts General Hospital	General Radiology[62]	1 month, full time, monthly	150.00
At: Peter Bent Brigham Hospital	General Radiology[62]	1 month, full time, monthly	150.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich. At: City of Detroit Receiving Hospital	Medical X-Ray Conference	12 weeks, Summer Quarter	15.00
	Medical X-Ray Conference	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Medical X-Ray Conference	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
At: Wayne County General Hospital, Eloise	Medical X-Ray Conference	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Medical X-Ray Conference	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
University of Minnesota Medical School, Department of Postgraduate Education, Minneapolis 14 At: Center for Continuation Study	X-Ray Cardiovascular Roentgenology[1]	6 days, Oct. 25-30, 1948	To be announced
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Beth El Hospital	Roentgen Diagnosis	8 weeks, 1 hour per week, beginning October 1948	20.00
At: Jewish Sanitarium and Hospital for Chronic Diseases	Clinical Radiology	8 weeks, 1 hour per week, beginning October 1948	20.00
Columbia University College of Physicians and Surgeons, 630 W. 168 St., New York 32 At: Columbia-Presbyterian Medical Center	Radiology PM 1 - Radiological Physics[1]	2 months, part time, Sept. 21-Nov. 18, 1948	25.00
At: Mount Sinai Hospital	Radiology PM 30 - Introduction to Nuclear Physics for Physicians[1]	3 months, October 1, 1948-January 28, 1949	60.00

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Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	RADIOLOGY—Continued		
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Diagnostic Roentgenology	6 weeks, half time, every 6 weeks except during July and August	150.00
	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
	Radium and Roentgen Therapy	6 weeks, half time, every 6 weeks except during July and August	150.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Radiology	3 months, full time, October 1, 1948	300.00
	Radiology	3 months, full time, January 2, 1949	300.00
	Radiology	12 months, full time, October 1, 1948	1000.00
New York University College of Medicine, 477 First Ave., New York 16	Diagnostic Radiology	12 weeks, part time, Sept. 27-Dec. 17, 1948	100.00
	Diagnostic Radiology for General Practitioners	32 weeks, part time, Oct. 8, 1948-May 13, 1949	100.00
At: Beth Israel Hospital	Roentgenology	8 weeks, part time, Sept. 28-Nov. 18, 1948	50.00
University of Oregon Medical School, 3181 S. W. Marquam Hill Road, Portland 1	Radiology	5 days, full time, November 1-5, 1948	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Radiology	8 months, October 1948-June 1949	800.00
	SURGERY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Clinical Surgery	10 weeks, part time, September 1948	150.00
	Fractures and Traumatic Surgery	2 weeks, full time, October 25, 1948	125.00
	Lecture Course in General Surgery	10 weeks, part time, September 16, 1948	Not given
	One Month Course - General Surgery	4 weeks, full time, August 2, 1948	300.00
	One Month Course - General Surgery	4 weeks, full time, September 13, 1948	300.00
	One Month Course - General Surgery	4 weeks, full time, October 11, 1948	300.00
	One Month Course - General Surgery	4 weeks, full time, November 8, 1948	300.00
	One Week Course in Surgery of Breast and Thyroid	1 week, full time, October 25, 1948	150.00
	One Week Course in Surgery of the Colon and Rectum	1 week, full time, September 20, 1948	100.00
	One Week Course in Surgery of the Colon and Rectum	1 week, full time, October 18, 1948	100.00
	One Week Course in Surgery of the Colon and Rectum	1 week, full time, November 15, 1948	100.00
	Personal Course in Gallbladder Surgery	4 days, full time, November 1, 1948	100.00
	Surgical Aspects of Pheripheral Vascular Diseases	5 weeks, part time, September 1948	60.00
	Surgical Diagnosis	10 weeks, part time, October 1948	100.00
	Surgical Technique with Practice	10 weeks, part time, September 1948	200.00
	Thoracic Surgery	1 week, full time, October 18, 1948	100.00
	Thoracic Surgery	10 weeks, part time, October 1948	100.00
	Two Week Course in Surgical Technique	2 weeks, full time, July 19, 1948	200.00
	Two Week Course in Surgical Technique	2 weeks, full time, August 16, 1948	200.00
	Two Week Course in Surgical Technique	2 weeks, full time, September 27, 1948	200.00
	Two Week Course in Surgical Technique	2 weeks, full time, October 25, 1948	200.00
	Two Week Course in Surgical Technique	2 weeks, full time, November 29, 1948	200.00
	Two Week Course in Surgical Anatomy and Clinical Surgery	2 weeks, full time, July 6, 1948	150.00
	Two Week Course in Surgical Anatomy and Clinical Surgery	2 weeks, full time, August 16, 1948	150.00
	Two Week Course in Surgical Anatomy and Clinical Surgery	2 weeks, full time, September 27, 1948	150.00

References will be found on page 749

Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	SURGERY--Continued		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12.—*Continued*	Two Week Course in Surgical Anatomy and Clinical Surgery	2 weeks, full time, October 25, 1948	150.00
	Two Week Course in Surgical Anatomy and Clinical Surgery	2 weeks, full time, November 22, 1948	150.00
	Vaginal Approach to Pelvic Surgery	1 week, full time, September 27, 1948	100.00
	Vaginal Approach to Pelvic Surgery	1 week, full time, October 25, 1948	100.00
Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16	Gynecology and Surgery for the General Practitioner	25 weeks, part time, Oct. 1, 1948 - Mar. 3, 1949	150.00
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich.	Surgery Seminar	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Surgery Seminar	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Surgery PM 30 - Surgery of the Gastrointestinal Tract[1]	4 weeks, full time, October 4-30, 1948	150.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	800.00
	Surgical Technique	50 hours, arranged	375.00
	Thoracic Surgery	3 weeks, full time, Fall 1948	325.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Clinical and Operative (Cadaver) Surgery	6 weeks, full time, October 1948	200.00
	Clinical Surgery	6 weeks, full time, October 1, 1948	100.00
	Clinical Surgery	6 weeks, full time, January 2, 1949	100.00
	Combined Surgical Course Including Cadaver Surgery and Gynecology	3 months, full time, October 1, 1948	350.00
	Combined Surgical Course Including Cadaver Surgery and Gynecology	3 months, full time, January 2, 1949	350.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	Recent Advances in Surgery	10 days, full time, Sept. 20-30, 1948	175.00
	#550 - Diagnosis and Treatment of Trauma	6 days, full time, December 6-11, 1948	60.00
	#558 - Surgery of the Hand[1]	6 days, full time, October 4-9, 1948	75.00
	#560 - Seminar in Traumatic Surgery[1]	2 weeks, full time, Sept. 13-25, 1948	125.00
	#901 - Review of General Surgery for Surgeons[1]	4 weeks, full time, Oct. 18-Nov. 13, 1948	300.00
University of Oregon Medical School, 3181 S.W. Marquam Hill Road, Portland 1	General Surgery	5 days, full time, October 18-22, 1948	50.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Surgery	8 months, October 1948-June 1949	800.00
University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6	Observation Course in Surgery for Specialists[1]	Arranged	100.00[10]
	THERAPY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Radiation Therapy	2 weeks, full time, every two weeks	110.00
	Radiation Therapy	4 weeks, full time, every month	200.00
	Radiation Therapy	2 months, full time, every month	300.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Jewish Sanitarium and Hospital for Chronic Diseases	Clinical Therapeutics	7 weeks, part time, beginning October 1948	40.00
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Physical Therapy in General Practice (Physical Medicine PM-30)	4 months, part time, Oct. 5, 1948-Feb. 1, 1949	85.00
	Recent Advances in Therapy (Medicine PM-44)	5 weeks, part time, Oct. 20-Dec. 8, 1948	35.00
New York Academy of Medicine, 2 E. 103rd St., New York 29 At: New York Academy of Medicine and selected local hospitals	Advances in Therapy (The 21st Graduate Fortnight of The New York Academy of Medicine)	2 weeks, full time, October 4-15, 1948	10.00

References will be found on page 749

Postgraduate Courses for Practicing Physicians—July 1, 1948 to January 15, 1949—Continued

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
	TROPICAL MEDICINE		
Tulane University of Louisiana Division of Graduate Medicine, 1430 Tulane Ave., New Orleans 13	Tropical Medicine and Public Health Leading to the Degree of Master of Public Health (Tropical Medicine)	9 months, Sept. 2, 1948 to May 30, 1949	500.00
	UROLOGY		
Cook County Graduate School of Medicine, 427 S. Honore St., Chicago 12	Two Weeks Urology	2 weeks, full time, September 27, 1948	225.00
Joint Committee on Post-Graduate Education, Long Island College of Medicine, Medical Society of the County of Kings and Academy of Medicine of Brooklyn, 1313 Bedford Ave., Brooklyn 16 At: Long Island College Hospital	Urology	1 month, part time, beginning October 1948	50.00
New York Hospital (James Buchanan Brady Foundation), 525 E. 68th St., New York 21	Postgraduate Course in Urology	31 weeks, full time, 6 months or longer, January 1, 1949[63]	500.00
New York Medical College, Flower and Fifth Avenue Hospitals, 20 E. 106th St., New York 29	Division of Graduate Studies, Basic Medical Sciences-Surgery, Medicine, Obstetrics and Gynecology, Pediatrics, Radiology, Urology, Otolaryngology, Pathology, Anesthesiology	9 months, October 1948	600.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Urology	8 months, full time, October 1, 1948	800.00
New York Post-Graduate Medical School, 303 E. 20th St., New York 3	#1010 - Advanced Course in Urology for Specialists[1]	2 months, full time, Oct. 4-Nov. 24, 1948	$300.00
	#1010 - Advanced Course in Urology for Specialists[1]	2 months, full time, Jan. 3-Feb. 26, 1949	300.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4	Urology	8 months, October 1948-June 1949	800.00
American Urological Association, 899 Madison Ave., Memphis, Tenn. (Under the auspices of the Los Angeles Urological Society, in conjunction with the College of Medical Evangelists)	Graduate Instruction in Urology (Basic Sciences and their application to the problems of Urology	Last week in November 1948	Not given
	VENEREAL DISEASE		
United States Public Health Service, Hot Springs National Park, Arkansas and Arkansas State Board of Health At: USPHS Medical Center, Hot Springs National Park	Eleventh Postgraduate Course in the Clinical Management and Public Health Control of the Venereal Diseases	3 weeks, full time, Fall 1948	None
Wayne University College of Medicine, 1516 St. Antoine St., Detroit, Mich. At: Social Hygiene Clinic	Conference on Venereal Diseases	12 weeks, part time, Sept. 20-Dec. 11, 1948	15.00
	Conference on Venereal Diseases	12 weeks, part time, Dec. 13, 1948-Mar. 19, 1949	15.00
Bureau of Social Hygiene, City of New York Department of Health, 125 Worth St., New York 13 At: Central Clinic	Postgraduate Course in Diagnosis and Treatment of Venereal Diseases	15 sessions, Fall 1948	None
	Practical Seminar in Diagnosis, Treatment and Control of Venereal Diseases	2 mornings a week throughout the year	None
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York 32 At: Mount Sinai Hospital	Venereal and Skin Diseases (Medicine PM-40)	6 weeks, part time, Oct. 6-Nov. 24, 1948	30.00
Graduate School of Medicine, University of Pennsylvania, 237 Medical Laboratories, Philadelphia 4 At: Institute for the Study of Venereal Disease, Hospital of the University of Pennsylvania, 36th and Spruce Sts., Philadelphia 4	Four Week Intensive Review Course (Venereal Diseases)	4 weeks, arranged	Not given
	Six Months Essential Basic Training (Venereal Diseases)	6 months, arranged	Not given
	Ten Day Intensive Training Course in Venereal Disease Control	10 days, arranged	Not given
	Three Week Venereal Disease Control Review Course	3 weeks, arranged	Not given

References will be found on page 749

FOOTNOTES

1. Specialists
2. M.D.'s with special qualifications.
3. Priority given to residents in surgery.
4. Tution.
5. Registration fee.
6. Incidental fee.
7. For 12 weeks.
8. For 16 weeks.
9. For 8 weeks.
10. Per month.
11. A third week, $65.00
12. Books.
13. Instruments.
14. Anatomy 120 hours, Pathology 60 hours, Physiology 60 hours: Students may enroll for any one section.
15. Requirements: M.D. degree from approved medical school. Appointment in an assistant residency or preceptorship approved by American Board of Obstetrics and Gynecology. Personal Interview. Course has been approved by the Post-Graduate Survey Committee of the American Board of Obstetrics and Gynecology and may be presented for 6 months' credit towards certification by the Board.
16. $800.00 for surgery; $600.00 for other specialities.
17. Per week.
18. This course is specifically for Residents in this area.
19. Per semester.
20. Each city.
21. American College of Physicians (A.C.P.) members.
22. Non-members.
23. This course is planned for those who have taken Electrocardiography I or who have sufficient experience in the interpretation of electrocardiograms.
24. This course may be taken for more than 2 months, if the student wishes, and the tuition is $125.00 for each additional month.
25. Per quarter.
26. Weekly, for shorter courses.
27. Internal Medicine, may be arranged in special cases, provided places are available, for 3 months beginning October 4, 1948, January 3, 1949 or April 4, 1949. ($250.00 for 3 months).
28. Trainee is paid $10.00 per day while on duty. It is required that at least 50% of the trainee's time be taken up with the diagnosis and treatment of cancer and that he will be on duty full time as an integral member of the hospital staff.
29. Intern and Resident.
30. Ten lectures.
31. Single lecture.
32. Per day.
33. Charge for non-members.
34. No charge for members.
35. For complete series.
36. Registration is gratis to men of armed services, residents and interns of hospitals and senior and junior medical students of the University of Kansas.
37. Eligibility limited to physicians practicing in Rochester Region.
38. Per course.
39. Complete course.
40. Per year.
41. For advanced students in training.
42. $300.00 the first year; $100.00 the following years
43. Approved psychiatric training required to qualify for the course.
44. For those with some training in psychoanalysis.
45. Primarily for students in analysis.
46. Special course open to staff and members of mental institutions.
47. Full course.
48. Lecture course only.
49. Course is limited to applicants whose biographical data is approved by a special committee.
50. Possibly $700.00.
51. Per hour.
52. Otolaryngology.
53. Ophthalmology.
54. 4 days.
55. 2 days.
56. Open only to selected members of course in Audiology and End-Aural Otologic Surgery.
57. Per two-month periods.
58. Each section – per 12 sessions.
59. Proctology I is prerequisite to Proctology III.
60. Course may be taken 6 days a week for one month or 3 days a week for 2 months.
61. Course devised specifically for physicians practicing in New York State as preparation for position of local health officer.
62. Limited to physicians who have a working knowledge of Radiology.
63. 31 weeks, full time, for veterans: 6 months or longer for others.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, June 12, page 661

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Last week in Aug. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau. Examination

FLORIDA: Examination. Gainesville, Nov. 6. Final date for filing application is Nov. 6., Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: Des Moines, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: Examination. Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

NEBRASKA: Examination. Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Examination. Santa Fe, June 27. Sec., Miss Marguerite Kilkenny, State Capitol Bldg., Santa Fe.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: Examination. Portland, Sept. 4. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

TENNESSEE: Examination. Memphis, July 5-6. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WASHINGTON: Examination. Seattle, July 7-8. Act. Dir., Dept. of Licenses, Mr. G. C. Starlund, Sec., Miss Virginia Wotherspoon, Olympia.

WISCONSIN: Examination. Madison, Sept. 25. Final date for filing application is Sept. 10. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Journal of Physiology, Baltimore
151: 239-652 (Dec.) 1947. Partial Index

Relation of Salivary Flow to Thirst Produced in Man by Intravenous Injection of Hypertonic Salt Solution. J. H. Holmes and M. I. Gregersen. -p. 252.
Displacement of Blood from Lungs by Pressure Breathing. W. O. Fenn, A. B. Otis, H. Rahn and others. -p. 258.
Oxygen and Carbon Dioxide Tensions of Alveolar Air and Arterial Blood in Healthy Young Adults at Rest and After Exercise. M. Galdston and A. C. Wollack. -p. 276
Measurement of Plasma Volume as Distribution Volume of Injected Autogenous Plasma. H. C. Lawson, O. W. Shadle, J. C. Moore and D. T. Overbey. -p. 297.
Peripheral Visual Acuity of 55 Subjects Under Conditions of Flash Presentations. F. N. Low. -p. 319.
Plasma Ac-Globulin Activity. B. C. Murphy, A. G. Ware and W. H. Seegers. -p. 338.
Protection of Cerebral Circulation by Cerebrospinal Fluid Under Influence of Radial Acceleration. R. F. Rushmer, E. L. Beckman and D. Lee. -p. 355.
Effect of Dilute Saline Solutions on Gastric Potential and Secretion of HCL. L.E. Hokin and W.S. Rehm. -p. 380.
Role of Dietary Protein in Experimental Liver Regeneration: Nitrogen Balance Study. H. M. Vars and F.N. Gurd. -p. 391.
*Working Capacity in Patients with Orthopedic Handicaps from Poliomyelitis: I. Energy Expenditure in Walking at Various Speeds and Grades. E. Simonson and A. Keys. -p. 405.
Forces Exerted at Different Velocities in Human Arm Movements. R. J. Dern, J. M. Levene and H. A. Blair. -p. 415.
Blood Volumes of Normal Children. Minerva Morse, D. E. Cassels and F. W. Schultz. -p. 498.
Roentgenographic Study of Effect of Pneumatic Anti-Blackout Suit on Hydrostatic Columns in Man Exposed to Positive Radial Acceleration. R. F. Rushmer. -p. 459.
Effects on Man of High Concentration of Carbon Dioxide in Relation to Various Oxygen Pressures During Exposures as Long as 72 Hours. W. V. Consolazio, M. B. Fisher, N. Pace and others. -p. 479.
Transient Hypotension Following Rapid Intravenous Injections of Hypertonic Solutions. E. E. Muirhead, R.W. Lackey, C. A. Bunde and J. M. Hill. -p. 516.
Increased Tolerance to Severe Anoxia on Carbon Dioxide Administration. R. F. Kline. -p. 538.
Types of Afferent Fibers in Phrenic Nerve. R. M. Kohrman, J. B. Nolasco and C. J. Wiggers. -p. 547.
Influence of High Fat Diets on Alloxan Diabetes. R. G. Janes and M. Prosser. -p. 581.
*Variations in Effect of Anoxia on Performance. D. M. Green. -p. 588.
*Observations on Effects of Adrenalin on Renal Function and Circulation in Man. J. A. Barclay, W. T. Cooke and R. A. Kenney. -p. 621.
Thermal Exchange of Man at High Temperatures. N. Nelson, L. W. Eichna, S. M. Horvath and others. -p. 626.

Working Capacity in Orthopedic Handicaps from Poliomyelitis.—Simonson and Keys compare energy expenditures of 2 poliomylitis patients, 1 clinically completely recovered from paralysis (E. B.), the other with an almost atrophic right leg (J.D.), to those of 2 normal subjects during walking on a treadmill at different speeds and grades. E.B.'s energy expenditure coincided with the normal values at all variations of speed up to 3.5 miles per hour with a slight tendency to higher values at 4 miles per hour. J.D.'s energy expenditure when walking with braces exceeded the normal values (1.5 to 2.6 times) at all variations investigated (up to 3 miles per hour). Without braces, J.D.'s energy expenditure was considerably higher than it was with braces. The respiratory efficiency of J.D. was definitely lower than that of the other subjects, at all variations. The level of the energy expenditure at a given variation characterizes the degree of handicap of a given patient. The trend of the curves indicates that 4 miles per hour is the limit of tolerance for E.B., and 2.5 miles per hour for J.D. The level of energy expenditure appears to be a good index for the relief obtained by means of braces. It is possible that this method could be used to compare different types of braces. The ability to maintain a steady state of oxygen consumption appears to be a good index for fatigue trends. The comparatively low oxygen debts of both J.D. and E.B. indicate that the breakdown of the steady state is not due to cardiovascular insufficiency. The maximum level at which the steady state can be maintained in normal subjects depends on the cardiovascular capacity for oxygen transport. Patients with orthopedic handicaps are obviously not able to reach this limit. Therefore, the increase of the oxygen consumption with continuation of walking is obviously due to the increasing use of auxiliary muscle groups. This might explain why in E.B. the breakdown of the steady state was not associated with an increased oxygen debt. The drop of the respiratory efficiency appears to be a good criterion for the limit of working capacity and for fatigue of patients with orthopedic handicaps as well as of normal subjects.

Effect of Anoxia on Performance.—According to Green, variations in the effect of anoxia on human performance may significantly alter the relative efficiency of persons working under lowered oxygen tensions. Among the factors known to influence these variations are rate of ascent, degree of activity and duration of exposure, state of health, psychogenic disorders and cardiovascular disease. However, when these factors are equalized, a considerable range of variation still remains. This study was undertaken to determine the relationship of anoxic alterations in individual neuromuscular functions to one another and to the mean performance of the subject. The differences in percentage impairment of various aspects of group performance indicate that the quantitative changes observed under conditions of anoxia depend not only on the subject but on the nature of the function under study. Net performance under such conditions is a composite result of alterations in a number of functions not similarly affected by an identical change in oxygen pressure. Individual subjects under anoxic conditions exhibit a considerable degree of variation both as to net decrement in performance and as to relative impairment of particular functions. As a consequence, tests which measure a single function are not apt to be of selective value in singling out the persons who can perform with maximum over-all effectiveness under low oxygen tensions.

Effects of "Adrenalin" on Renal Function.—Barclay and his co-workers point out that during exercise there is diminution in renal plasma flow and glomerular filtration rate, and in an attempt to elucidate the possible role of epinephrine ("adrenalin") in producing such changes the effects of the administration of the hormone on the renal hemodynamics in man have been reinvestigated. The subjects were students with normal renal function. Eight hundred milliliters of water were given by

mouth to insure adequate flow of urine. Renal plasma flow and glomerular filtration rate were determined. After two or more control periods, epinephrine was administered to 6 subjects intramuscularly and to 8 subjects by a continuous intravenous infusion. Blood pressure was determined by auscultation, and pulse rates were taken at intervals. A fall in inhibition of urinary flow was inconstant. There was no evidence that epinephrine plays a significant part in the renal picture seen in exercise.

Anesthesiology, New York
9:1-114 (Jan.) 1948

Centennial of Chloroform. B. H. Kindschi. -p. 1.
Pentobarbital Sodium-Curare Induction for Endotracheal Intubation. H. Carron, V. K. Stoelting and S. C. Cullen. -p. 11.
Regeneration of Soda Lime Following Absorption of Carbon Dioxide. R. Foregger. -p. 15.
Rationale and Hazards of Pressure Breathing and Oxygen Therapy. H. W. Ryder and R. A. Kehoe. -p. 21.
Endotracheal Anesthesia for Operations on Cleft Lip and Cleft Palate. M. D. Leigh and H.A. Kester. -p. 32.
Anesthesia in Surgery of Patent Ductus Arteriosus M. H. Adelman. -p. 42.
Diaphragmatic Paralysis. W. H. Cassels and L. A. Gittelson. -p. 48.
Adaption of Albee-Comper Table to Prone Position for Thoracic Surgery. J. D. Murphy and B.C. Sword. -p. 58.
Endotracheal Anesthesia with Sodium Pentothal for Maxillofacial Surgery: Report on 48 Cases. V. J. Collins. -p. 62.
Premedication and Anesthesia in Obstetrics: Practical Aspects. B. B. Hershenson. -p. 73.

Archives of Neurology and Psychiatry, Chicago
59:1-140 (Jan.) 1948

Growth and Development of Cerebral Cortical Pattern in Man. O. A. Turner. -p. 1.
Relation of Personality Problems to Onset and Progress of Multiple Sclerosis. O. R. Langworthy. -p. 13.
*Hemoconcentration After Electrically Induced Convulsions in Man. M. D. Altschule, J. E. Cram and K. J. Tillotson. -p. 29.
Spatial Organization of Visual Perception Following Injury to Brain. M. B. Bender and H.L. Teuber. -p. 39.
One Hundred Years of Progress in Neurology, Psychiatry and Neurosurgery. S. Cobb. -p. 63.

Hemoconcentration After Electric Convulsions.—In view of the fact that variations in the water balance influence the activity of the cerebral cortex and cause important changes in the body as a whole, Altschule and his co-workers decided to investigate the occurrence of hemoconcentration during the violent muscular contractions of electrically induced convulsions. Fifty-five studies of hematocrit readings and sixty determinations of plasma protein were made before and after routine electroshock treatments on 10 patients. It was found that hemoconcentration and decreased plasma volume occur regularly. Curare diminishes but does not abolish these changes. It is suggested that the decreases in plasma volume are probably important in explaining the fall in venous and arterial pressures noted toward the end of electrically induced seizures in many patients. The question arises whether the brief periods of muscular contraction occurring during electrically induced convulsions can cause the same type of response of the pituitary gland as a more protracted voluntary muscular effort. In the studies based on protracted exercise, antidiuretic hormone was liberated in detectable amounts only during a brief initial period of the exertion. The data of the present study are no more than suggestive in regard to activation of the function of the posterior lobe of the pituitary as a consequence of changes in the blood during electrically induced convulsions. Definite conclusions must await an attempt to evaluate the role of the passage through the brain of the electric current itself, with direct stimulation of the hypothalamic-hypophysial mechanisms.

Archives of Ophthalmology, Chicago
39:1-134 (Jan.) 1948

Influence of Grenz Rays on Cell Division and Wound Healing in Corneal Epithelium. G. K. Smelser and R. L. Pfeiffer. -p. 1.
Intramural Vascular System (Vasa Vasorum?) in Retinal Vessels. A. Loewenstein. -p. 9.
Stereoscope as Training Instrument. M. R. Stoll and P. Boeder. -p. 27.
Neurologic Significance of Lateral Conjugate Deviation of Eyes on Forced Closure of Lids. D. G. Cogan. -p. 37.
Chemosurgical Treatment of Cancer of Eyelid: Microscopically Controlled Method of Excision. F. E. Mohs. -p. 43.
Aniridia Congenita: Report of 5 Cases; Genealogy; Possibilities of Treatment. M. H. Pincus. -p. 60.
Human Conjunctiva Grafted on Chorioallantois of Chick Embryos. A. Feigenbaum and W. Kornblueth. -p. 67.
*Unilateral Syphilitic Primary Atrophy of Optic Nerves. Anatomic Study of 2 Cases. W. L. Bruetsch. -p. 80.

Syphilitic Atrophy of Optic Nerve.—Bruetsch says that in his anatomic material of 12 cases of syphilitic primary optic nerve atrophy, death had occurred in 2 at a time when the atrophy was confined to one optic nerve. Microscopic studies on the visual pathways in these 2 cases are presented. They furnished the clue to the ultimate degeneration of the nerve fibers of both optic nerves. The author arrives at the conclusion that unilateral syphilitic primary atrophy of the optic nerve is almost always the forerunner of bilateral atrophy of this nerve. At the time the demyelination of the nerve fibers has progressed to complete degeneration in one optic nerve, there is already present in the normal nerve a syphilitic inflammatory exudate which ultimately will lead to atrophy of the not yet demyelinated optic nerve. Syphilitic optochiasmatic arachnoiditis, which is frequently present in neurosyphilis, has nothing to do with the causation of the atrophy of the optic nerves. The most efficacious treatment of syphilitic atrophy of the optic nerve is malarial therapy, aided by concomitant and subsequent courses of penicillin, each course consisting of administration of at least 5,000,000 units.

California Medicine, San Francisco
68:57-120 (Feb.) 1948

Low Back Pain from Orthopedic Standpoint. H. T. Jones. —p. 57.
Consideration of Etiology in Development of Ruptured Intervertebral Disk. R. B. Raney and A. A. Raney.—p. 65.
Low Back Pain and Its Management by General Surgeon. E. D. Butler.—p. 70.
Back Pain From Gynecologic Standpoint. E. B. King.—p. 74.
Pyloric Stenosis Not a Disease of "First-Born." G. D. Delprat and O. Pflueger.—p. 76.
*Granuloma Inguinale. D. Frost and B. F. Ryan.—p. 77.
Family Physician and Medical Education. H. E. Thelander. —p. 78.
Psychoneurosis Based on Organic Ailment Cured by Electric Shock Therapy. D. R. Sears.—p. 81.
Perinephric Abscess Secondary to Renal Infection. A. M. Meads.—p. 83.
Benign and Malignant Prepyloric Lesions of Stomach. G. K. Smith.—p. 86.
Otologic Diagnostic Clinics of California. W. D. Currier.—p. 88.
Ophthalmologic Progress: Sight Restoration by Corneal Transplant. J. P. Lordan.—p. 90.

Granuloma Inguinale.—Frost and Ryan say that

the increase in the Negro population in California has been accompanied by a greater incidence of granuloma inguinale. Since most medical texts stress the inguinal manifestations rather than the earlier genital lesions, many cases are at first not recognized or have been confused with other venereal diseases. Granuloma inguinale usually begins with a vesicle, papule or nodule on the preputial orifice, the labia minora or the vaginal wall. Of 8 cases of granuloma inguinale seen at Oakland City Clinic in a period of six months, all but 1 presented lesions confined to the genitalia. The chronicity of the lesions on the external genitalia is of differential diagnostic value. The diagnosis depends on the demonstration of the pathognomonic Donovan bodies in spreads which are prepared by crushing curetted material from the lesions between glass slides. The Donovan body, which can be stained with Wright or Giemsa stains, may be found extracellularly or within the cytoplasm of the large monocytes. These bodies look like a closed safety pin due to their elongated ovoid shape and intense bipolar staining reaction. The disease usually responds favorably to antimony compounds. Stibophen is considered to be the drug of choice.

Gastroenterology, Baltimore
10:1-176 (Jan.) 1948

Chronic Nonspecific Ulcerative Colitis: Roentgenologic Study of Its Course. W.E. Ricketts, J.B. Kirsner and W.K. Palmer. -p. 1.
Evaluation of Clinical Management of Chronic Ulcerative Colitis. E.D. Kiefer. -p. 16.
*Treatment of Idiopathic Ulcerative Colitis by Means of "Medical Ileostomy" and Orally Administered Protein Hydrolysate-Dextri-Maltose Mixture. T.E. Machella and T.G. Miller. - p. 28.
Chemotherapy and Antibiotics in Chronic Ulcerative Colitis. M. Block and H.M. Pollard. -p. 46.
Psychiatric Factors in Ulcerative Colitis. G.E. Daniels -p. 59.
Surgical Treatment of Ulcerative Colitis. R.B. Cattell. -p. 63.
*Hepatic Dysfunction and Cirrhosis in Chronic Ulcerative Colitis. J.R. Ross and J.M. Swarts. -p. 81.
Movements of Esophagus in Presence of Cardiospasm and Other Esophageal Diseases. Roentgenologic Study of Muscular Action. F.E. Templeton. -p. 96.
Gastric Polyps. J.B. Carey and L. Hay. -p. 102.
*Gastroscopic Observations in Pernicious Anemia. L.L. Hardt, S.O. Schwartz and F. Steigmann. -p. 108.
Study of Gastric Acids in Prefrontal Lobotomy. J.A. Reed. -p. 118.
Repeated Gastroduodenal Hemorrhages Without Discoverable Explanation. B.H. Crohn, H.H. Marshak and D. Galinsky. -p. 120.
Studies on Gallbladder in Unanesthetized Dogs Before and After Vagotomy. W.J. Snape. -p. 129.
Changes in Motility of Human Small Intestine During Sleep. J.D. Helm Jr., P. Kramer, R.M. MacDonald and F.J. Ingelfinger. -p. 135.

Treatment of Idiopathic Ulcerative Colitis.—Machella and Miller recommended ileostomy to a young woman with chronic idiopathic ulcerative colitis, who was not responding to the usual medical measures. When she refused, it was decided to try to simulate a surgical ileostomy. The procedure consisted of introducing a Miller-Abbott tube into the terminal ileum and of maintaining constant suction so as to prevent the intestinal contents from reaching the diseased colon. To assure an adequate amount of protein food and to lessen the chances of the tube's becoming obstructed by solid matter, the oral administration of a solution containing equal parts of an enzymatic casein digest and of "dextri-maltose" was selected. The result in this patient was so satisfactory that it has been used in the treatment of others. The tube was kept in place for a period of seven to fifteen days. It was withdrawn when the volume of fluid aspirated had decreased sufficiently to indicate that most of the ingested solution was being absorbed and the patient was improving clinically. After the tube was withdrawn, the administration of the hydrolysate-"dextri-maltose" solution was continued until sigmoidoscopy revealed evidences of healing. At that time low residue foods were gradually added. Following discharge, the patient was advised to adhere strictly to the low residue diet. The 14 cases of idiopathic ulcerative colitis treated in this manner represent 12 patients, 2 of whom had relapses. A remission was induced in 11 of 12 patients, 9 of whom are still in remission after periods varying from two to twelve months. A relapse has occurred in 2 patients, in one after 7, and in another after 9 months of freedom from symptoms. A remission has again been induced in each of the 2. The 11 improved patients are in useful activity or gainful employment.

Hepatic Dysfunction in Ulcerative Colitis.—The study reported by Ross and Swarts was motivated by their observations of a patient whose ulcerative colitis was apparently complicated by severe hepatic disease and who ultimately died in hepatic failure. Twenty cases of chronic ulcerative colitis have been studied with the aid of liver function tests to determine evidence of active or latent hepatic damage. Two cases involving damage to the liver are discussed in detail. One hundred and fifty unselected cases of chronic ulcerative colitis were reviewed to determine the proportion of cases showing gross clinical evidence of hepatic disease. None was found. Twenty-seven cases of chronic ulcerative colitis were analyzed at necropsy for hepatic disease and were compared with 100 unselected necropsied cases in which death occurred from other causes. There was no greater incidence of hepatic insufficiency than occurs in other diseases in which uncorrected factors of severe anemia, weight loss and/or negative nitrogen balance appear. Sepsis or other hepatoxins or both add to the degree of hepatic damage. An analysis of the 20 specially studied clinical cases did not alter the pattern of incidence of damage to the liver. There is a trend toward hepatic insufficiency when weight loss, anemia and activity of the ulcerative disease are severe. The most significant results of liver function tests portending this change in hepatic function are a low serum protein level and/or the tendency to, or reversal of, the albumin-globulin ratio. The authors believe that correction of such factors as malnutrition and coincident protein deficit, plus correction of anemia when it is severe, are not only necessary measures in the treatment of chronic ulcerative colitis but offer needed protection to the liver.

Gastroscopic Observations in Pernicious Anemia. Hardt and his co-workers made gastroscopic studies on 100 patients with pernicious anemia. Nearly half of the patients were subjected to gastroscopy on two or more occasions. Atrophy was found in 59 of the patients; that is, it is not present in all cases of pernicious anemia. Atrophy of the gastric mucosa was not related to the length of time the disease was present, the amount of previous liver therapy or the existing blood picture. Only 9 of 47 patients showed improvement in the appearance of the mucosa while under liver therapy, while 4 previously normal mucosas showed atrophy on reexamination. Polyps were found in 7 patients and carcinoma in 1 patient; the latter developed while the patient was under liver therapy. Repeated roentgen ray and gastroscopic studies are indicated in every pernicious anemia patient to discover as early as possible the presence of gastric carcinoma.

Psychiatry, Washington, D. C.

10: 355-452 (Nov.) 1947

Study of Psychiatry. Three Orienting Lectures. H.S. Sullivan.--p.355.
Psychologic Aspects of Obesity. Hilde Bruch.--p.373.
Schizoid Maneuver. W.V. Silverberg.--p. 383.
Quantitative Analysis of Case Records. Experimental Study. B. Berelson.--p. 395.
Age of Mass Communication. P. Meadows.--p. 405.
Personal Meaning of Human Figure in the Rorschach. M. Hertzman and Jane Pearce.--p. 413.
Observations of Japanese Early Child Training. Mildred Sikkema.--p. 423.

South Dakota Journal of Medicine, Sioux Falls

1: 1-42 (Jan.) 1948

Brucellosis, Résumé of Diagnosis and Treatments. H. J. Harris. -p. 1.
Atomic Energy in Medicine. J. H. Lawrence. -p. 11.
Functional Respiratory Disturbance with Hyperventilation as Cause of Symptoms. C. K. Maytum. -p. 19.
Urinary Changes in Cancer: Preliminary Report. A. M. Harris. -p. 23.

United States Naval Med. Bulletin, Washington, D. C.

48: 1-152 (Jan.-Feb.) 1948. Partial Index

Modern Treatment of Progressive Deafness. C. A. Swanson and A. J. Delaney. -p. 1.
Liver Abscess. T. G. Hays, R. B. Brown and E. W. Godfrey. -p. 7.
Hepatic Amebiasis. H. J. F. Kullman. -p. 22.
*Ion Transfer of Penicillin. Efficacy of Penicillin Iontophoresis in Treatment of Chancroidal Ulcers. A. J. Pereyra. -p. 40.
Decortication of Lung in Organizing Hemothorax and Empyema. E. S. Lowe. -p. 52.
Therapy of Throat Infections with Bismuth vs. Penicillin. B. Schuster. -p. 61.
Radiographic Study of Fractures of Carpal Navicular Bone. J. L. Enyart, H. J. Brown and J. B. Trunnell. -p. 66.
Cardiac and Electrocardiographic Observations on American Prisoners of War Repatriated From Japan. W. M. Fischbach. -p. 69.
*Cotton Knots. R. L. Byron Jr. -p. 93.

Ion Transfer of Penicillin.--The experiments described by Pereyra were carried out to clarify the problem of ionic transfer of penicillin. It was found that without iontophoresis penicillin applied to the intact skin does not enter the body in amounts sufficient to be detected in the urine, but that sodium and calcium penicillin in adequate concentration in aqueous solution are effective electrolytic salts, and that penicillin applied to the intact skin by iontophoresis is absorbed into the body and is excreted in the urine in appreciable amounts. Only the negative electrode of the galvanic current applied to solutions of these salts effects the transfer of penicillin into the body. The transfer is accomplished most readily from free aqueous solutions of the salts, less readily from gauze pad applicators saturated with penicillin solution. The base was cut from an Erlenmeyer flask, and this open base was sealed to the skin with collodion applied to the rim. Eighty milliliters of penicillin solution were then poured into the glass chamber and the top closed with a stopper supporting a helical coil of copper wire which extended into the solution. This wire was connected to the negative terminal of a galvanotherapy unit. The positive terminal was connected to a thick layer of gauze wet with isotonic sodium chloride solution and wrapped around one leg. The application of penicillin by iontophoresis to the skin does not produce bacteriostatic blood levels of penicillin; the amount of penicillin recoverable in the urine following penicillin iontophoresis to the skin varies directly with the concentration of the solution, the duration of treatment and the strength of the current employed. Penicillin applied by iontophoresis is effective in the treatment of chancroidal ulcers.

Cotton Knots.--Byron says that it is usually stated that when cotton is used no attempt need be made to obtain a true square knot by crossing hands, and the suture may be cut "on the knot." In one of the operating rooms of a Marine field hospital during the Okinawa campaign, cotton was used as suture material. It was noted at the operating table that all too frequently the three knot tie had a disconcerting way of untying when a sudden strain was placed on the suture. Subsequently experiments with cotton suture material were made on a thread tester. It was found that the tensile strength of cotton is roughly proportional to the size. Double thread is slightly more than twice as strong as single thread. The presence of a knot in a thread weakens it by 18 to 33 per cent. A satisfactory knot with cotton which will not untie should be three square knots made by crossing hands and cut 1½ mm. from the knot.

Virginia Medical Monthly, Richmond

75: 55-106 (Feb.) 1948

Review of Fractured Hips. M.A. Johnson Jr.--p. 58.
Ocular Changes in Metabolic Diseases. I.S. Tassman.--p. 70.
*Streptomycin in Acute Brucellosis: Case Report. S. G. Page Jr., M. Perchonock and J. P. Williams.--p. 75.
Treatment of Bacterial Pneumonias. H. Walker.--p. 78.
Health Problems of Negroes in Richmond. Zenobia G. Gilpin.--p. 80.
Myasthenia Gravis: Two Case Reports. H.C. Meredith Jr.--p. 84.
Management of Thyrotoxicosis. E.C. Toone.--p.-87.
Two Interesting Ear Cases. A.G. Schnurman.--p. 89.
Coordination of Urban and Rural Public Health. C.H. Eller.--p.90.

Streptomycin in Acute Brucellosis.--Page and his associates report the case of a veterinarian, aged 22, who had been engaged in the manual removal of placentas from cows with Brucella abortus infection. He stated that headaches, moderate fever and malaise had persisted five to six weeks and that for three weeks he had had daily shaking chills and generalized aching late in the afternoon with elevations of temperature to about 103 F. An agglutination test was reported positive for brucellosis in a dilution of 1:6,400. About six days prior to admission the patient received an injection of Brucella antiserum intramuscularly without effect on his clinical condition. The patient lost an additional 15 pounds (6.8 Kg.) during his first twenty days in the hospital. From the twenty-first to the twenty-seventh day, there was a slow downward curve in the temperature peak, chills disappeared and the patient began to improve subjectively. Intramuscular streptomycin therapy was begun on the twenty-ninth hospital day and after Brucella abortus had been isolated from blood culture. Four days after the initiation of streptomycin therapy the temperature began to subside, reaching normal on the eleventh day of therapy. Five months later the patient had returned to work and had regained his normal weight without return of signs or symptoms of the disease. The authors say that they reported this case because the status of streptomycin therapy in the treatment of infections due to Br. abortus is unsettled. Keefer has recently stated that chronic infections with Brucella organisms have shown poor response to the use of streptomycin.

Book Notices

Gifford's Textbook of Ophthalmology. By Francis H. Adler, M.D., Professor of Ophthalmology, University of Pennsylvania Medical School, Philadelphia. Fourth edition. Cloth. Price, $6. Pp. 512, with 310 illustrations. W. B. Saunders Co., West Washington Square, Philadelphia 5. 1947.

The fourth edition of this textbook, which has been revised by Dr. Francis H. Adler, lays more stress on information of practical value that the undergraduate and practicing general physician should know. Consequently, the technics of refraction and operations have been considerably condensed. The various surgical procedures are given in a separate chapter, so that the reader may refer to them when necessary without interrupting the subject under discussion. There is a completely new chapter on Ocular Disorders due to diseases of the central nervous system, which was not included in the previous edition. The chapter on Disturbances of Ocular Motility has been rewritten to coincide with the new author's point of view from the physiologic standpoint. The chapter on Ocular Manifestations of General Diseases has been considerably enlarged and includes the newer methods of treatment such as the use of penicillin and streptomycin. There are about one hundred more illustrations, which greatly enhance the reading value. The discussions are practical and concise, the illustrations are carefully designed to supplement the text and the contents are succinct and well organized. The book is to be recommended to the medical student and general practitioner as well as to the ophthalmologist.

Epilepsy; Psychiatric Aspects of Convulsive Disorders. Edited by Paul H. Hoch, M.D., New York State Psychiatric Institute, New York, and Robert P. Knight, M.D., the Menninger Clinic, Topeka, Kan. The Proceedings of the Thirty-Sixth Annual Meeting of the American Psychopathological Association, Held in New York, May 1946. Cloth. Price, $4. Pp. 214, with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16. 1947.

This slender volume contains the fifteen papers read at the meeting of the American Psychopathological Association in May 1946. The contributions are strangely diverse—the new and the old, the physical and the psychical. In the former group are excellent up-to-date discussions of drug therapy (Merritt), of electroencephalography (Jasper) and of heredity (Kallmann and Sander). There is presentation of data on the prevalence of epilepsy (Malzberg), its social implications (Collier), mental testing (Mayman and Rapaport), and the behavior and educational problems of patients of the Baird Foundation Clinic. Convulsions in animals were induced by application of certain substances to the cortex (Kopeloff and Pacella) and by auditory stimuli (Patton). Problems of the psychology and personality of epileptic persons are discussed in four papers by Foxe, Piotrowski, Diethelm and Mittelmann, respectively. These serve to emphasize the failure of psychiatrists and psychologists to show that peculiar personality is a cause or an essential feature of epilepsy. The authors point out the need for the collection and study of data in this important but difficult field. The book illustrates the extent to which psychologic research has failed to keep pace with medical research in the field of epilepsy.

Prognose und Erblichkeitsmomente bei Ekzema infantum: Eine klinisch-statistische Untersuchung von Allergieerscheinungen. Von Gunnar Edgren. Inauguraldissertation welche mit gehöriger Genehmigung der weiterfahrenen medizinischen Fakultät zu Uppsala. Paper. Pp. 204. Appelbergs Boktryckeriaktiebolag Uppsala, 1943.

The monograph reports a follow-up study of 381 cases of infantile eczema compared with 454 noneczematous controls. Special attention is given to heredity and nutrition in the causation of the disease and to its prognosis with respect to allergic manifestations such as seasonal rhinitis, bronchial asthma, urticaria, papular urticaria (strophulus) and angioneurotic edema. All patients had been seen in pediatric wards or clinics during the first two years of life; the interval between first and last observation varied from a minimum of seventeen years to a maximum of thirty-eight years. Allergic diseases were commoner in parents and siblings of eczematous children than in those of controls, but the presence of environmental factors prevented definite conclusions about the mechanism of inheritance. Infantile eczema occurred more frequently in boys than in girls. The average age of onset was 5 months. The initial lesion healed at an average age of 2 years, but one fourth of the cases cleared up at as early as 15 months, one quarter at as late as 3½ years. Besnier's prurigo followed in 18 per cent of the cases; eczema recurred in 24 per cent, but never more than once in the same patient. No difference was found in the incidence of infantile eczema in breastfed and bottlefed children. Forty-two per cent of the eczematous children had occasional allergic symptoms (controls, 10 per cent); 21 per cent were continuously affected (controls, 2 per cent), and only 37 per cent remained free of symptoms: these figures seemed to support the existence of a common hereditary factor in infantile eczema and other allergic manifestations. Patients whose parents had allergies and those with early and extensive eczema showed a high incidence of allergic symptoms in later years; bronchial asthma is more apt to develop in boys with infantile eczema than in girls. The mortality rate of the eczematous group does not differ from that of the noneczematous controls.

Calcific Disease of the Aortic Valve. By Howard T. Karsner, M.D. and Simon Koletsky, M.D. Fabrikoid, Price, $5. Pp. 111, with 24 illustrations. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1947.

In this monograph the authors present a new and authoritative evaluation of an old and controversial subject. Beginning with Valsalva, they have made a comprehensive survey of the literature on calcific disease of the aortic valve. They have reviewed the classic studies of Monckeberg on the histology of normal and sclerotic aortic valves, and with this as a background they have analyzed their own 200 cases observed at necropsy. The anatomic analysis is carefully made, and with the aid of proper statistics they have been able to extract from their material a truer picture of certain factors involved in this disease than have any previous investigators. Excellent tables, charts and photographs help to present clearly the typical anatomic observations and the numerical data.

The authors point out the preponderance of cases in persons over 50 years of age, the relatively high incidence in males as opposed to females (1.6 to 1 when the corrections are made for the relative proportions of males to females in the autopsy population) and the low incidence in the Negro race. Cardiac enlargement, although a prominent factor in many cases, was not present to a significant degree in a large percentage. Rheumatic stigmas in various forms and of varying degrees were definitely demonstrable in 196 of 200 hearts examined. Microscopic evidence of rheumatic disease was usually present in more than one valve, but deforming valvular disease of a single valve was present in slightly less than half of the cases. The authors conclude from their studies that in all but a rare instance calcific disease of the aortic valve is the result of rheumatic cardiac disease.

Clinical features of the cases are described in detail. The diagnosis of aortic stenosis was offered in only 48 of 190 cases in which it might possibly have been made in life. Cardiac enlargement, systolic aortic murmurs and thrills, and left ventricular preponderance in the electrocardiogram appear to be the most dependable clinical signs. It is pointed out that roentgenologic studies have more to offer to clinical diagnosis than any other single method of observation. This book is highly recommended for those interested in diseases of the heart.

The Clinical Examination of the Nervous System. By G. H. Monrad-Krohn, M.D., F.R.C.P., Professor of Medicine in the Royal Frederick University, Oslo. Eighth edition. Fabrikoid. Price, $4.50. Pp. 380, with 126 illustrations. Paul B. Hoeber, Inc., 49 E. 33d St., New York 16, 1947.

The present edition of this excellent book on the clinical examination of the nervous system is larger and is entirely up-to-date. It has been thoroughly revised and recast. The author is one of the great neurologists of the world, and his book is essentially based on the fact that the physician must examine his patient in order to determine the nature and location of the disease or lesion. Angiography is discussed and in the opinion of the author is a great stride forward in intracranial

diagnosis. This book is one of the best on clinical examination in neurology. It is highly recommended for all medical students, residents and general practitioners.

Practical Office Gynecology. By Karl John Karnaky, M.D., Assistant Professor of Clinical Gynecology, Baylor University College of Medicine, Houston, Texas. Fabrikoid. Price, $7.50. Pp. 261, with 113 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

The information presented in this book is based on laboratory and clinical investigations of Trichomonas vaginalis, Monilia albicans and leukorrhea. These subjects therefore are emphasized in the book, but of course others are included, particularly endocrinology, sterility, disorders and infections of the external and internal genitals and orthopedic and urologic aspects of gynecology. These chapters are proper subjects for a treatise on practical office gynecology, as is also the interesting chapter on "Some Psychological Aspects of Gynecology" written in collaboration with Louis Spivak. However, it is difficult to see why the author included in a book on office gynecology the following chapters: "Pregnancy Tests, Management of Abortion, Premature Labor and Postpartum Bleeding" and "Ovarian Pathology," which includes more than three pages of illustrations of ovarian tumors and a discussion of surgery of the ovary. Other illustrations which have nothing to do with office practice are those of intestines removed during a criminal abortion, surgical specimens of uterovary, Brenner and granulosa cell tumors, hydatid mole and other neoplasms.

The author is fond of injecting estrogens into the anterior wall of the cervix to control bleeding, and he says he injects as much as 25 cm. of an oily vehicle into the cervical muscle (p. 39). In the treatment of infantile uterus the author states that "a properly fitted flexible stem pessary which induces strong contractions with concomitant myometrial development may be helpful (Bickers)." This is a dangerous recommendation for general practitioners, and the author himself must have realized this because he added a footnote saying the "Uterector, a soft flexible stem pessary, should be employed only by those experienced in its use since it can produce more harmful than beneficial effects under some circumstances. It is a dangerous instrument in the hands of the untrained physician." Then why even mention it in this book intended for general practitioners?

There is a full page colored illustration of the technic of uterotubal insufflation (p. 55) using air as the gas. It is not safe to recommend the use of air for the determination of tubal patency, because harm can result from it. Carbon dioxide is the safest gas to use for this purpose. The book contains numerous beautiful and instructive black and white and colored illustrations, but unfortunately many of them have appeared in the advertisements of pharmaceutical manufacturers. In the opinion of the reviewer this fact detracts from the enjoyment of the book. Karnaky has written many articles on vaginal discharges, vaginal acidity and the use of estrogens. This is evident in the list of references, which occupies eleven pages. The author lists himself forty-three times for articles, discussions and correspondence to medical journals. The book is well printed on sturdy paper and the illustrations have been beautifully reproduced. It is hoped that in the next edition Karnaky will omit the data which have nothing to do with office practice and include a few other subjects which are of importance to general practitioners in their office practice.

Pédagogie du nourrisson et du premier age. Par le Dr. A. Thooris. Paper. Price, 270 francs. Pp. 185. G. Doin & Cie, 8, Place de l'Odeon, Paris, 6e, 1947.

An anthropologist ventures into child rearing on the basis of his personal experience with his own children. Dr. Thooris attempts to apply physiologic principles in the every day management of infants and children. He considers the newborn beneath the developmental level of an animal, since the lack of excitability of the hemispheres at birth makes the infant comparable to a decerebrate dog. This is the concept of the absolute infant reduced to several inherited reflexes but deprived of all means of satisfying them. The mother is in the directive position of transforming her absolute infant into a conditioned being. An acquired reflex cannot be stabilized unless it is reenforced by an absolute reflex. As a student of Pavlov the author classifies reflexes as subcortical and cortical. The former are hereditary, few in number, stable and nonfatigable by virtue of their rhythmic character. The latter comprise the reflex of life and death, the reflex of hunger, the reflex of inquiry, the reflex of freedom and the sexual reflex. Thooris considers the reflex of hunger basic for educational training throughout life. Unfortunately, he uses the methods of animal trainers to teach infants. Indeed, he addresses a plea to the mothers of France to nurse their babies with "live" milk from their breasts rather than with "dead milk" from the cow. He does not consider it a profanation to speak of this absolute infant at birth as equivalent to an absolute dog in spite of the horror this image conveys to the mother. The parallel is strengthened by the contention that the decerebrate dog and the newborn infant would each die in front of a bowl of food or a bottle full of milk if one did not put the morsel in the jaws of the animal or the nipple in the mouth of the baby. In the attempt to study the development of the child from the mechanistic concept, the author fails to view the offspring against his hereditary, social and economic background. It must be remembered that intrauterine life lays the foundation for the child's future life and that birth, though an unavoidable necessity, is but one milestone from the uterus to the grave. Compared with other animals the child is peculiar in that his instinctive habits are extremely complex. Thooris reveals with remarkable clarity how the child's reactions are formed only after long processes of development and conditioning. Behavior patterns such walking, which is spontaneous in animals, must be acquired by the child. He has to learn innumerable performances, which in later life become habitual, in a way acceptable to the social group of which he is a member. He is also expected to undergo scholastic education according to his ability to develop habit patterns of abstract and applied knowledge. The period of apprenticeship which he serves before reaching full intellectual and emotional development is associated with a corresponding period of gradually diminishing physical immaturity. The author rightly points out that the infant is exceptionally vulnerable not only to trauma but to extremes of temperature, changes in diet and exposure to infection. The central nervous system of the infant is poorly myelinized, his digestive function limited and his blood-forming organs readily disorganized. These are not the characteristics in the developmental course of young animals. Consequently, the methods of animal husbandry can only be orientations rather than applications for rearing infants. Even the methods advocated by Thooris are human compromises. The chapters on conditioning of infants and training of young children constitute a sensible system of child guidance in the cause of healthy maturity.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INTERMITTENT CLAUDICATION

To the Editor:—What can be done to relieve intermittent claudication?

M.D., Long Island, N. Y.

ANSWER.—Intermittent claudication is a symptom of the following conditions: severe sclerotic changes in the arteries of the legs; arteriosclerosis in the spinal cord in the lumbosacral region; thromboangiitis obliterans (Buerger's disease) and peripheral vascular spasm in the legs. This symptom is at times associated with gout, diabetes mellitus and syphilis. Those patients who have sclerotic changes in the arteries of the legs and spinal cord can at best be treated only symptomatically. Patients with thromboangiitis obliterans are supposed to have an increased viscosity of their blood as well as an increase in cholesterol content in their blood. If gout, diabetes or syphilis are present they should be adequately treated. If pain is present without walking (rest pain) then that patient should be put to bed for at least two months to improve the circulation in the legs and to reduce the viscosity of the blood by large copious amounts of liquids. Smoking should be absolutely forbidden. Vasodilators in the form of injections of sodium nitrite and methacholine chloride should be tried three to four times per week. Injections of tissue extract three times a week should also be tried. Phenobarbital and papaverine hydrochloride may be tried. If the patient's pain decreases or vanishes, then that patient must be told to walk only when necessary. He should not run or walk fast and should not participate in any exercise or sport requiring the use of his legs. Diathermy, periarterial sympathectomy and baths have been tried but have not proved valuable. Every effort must be made to prevent gangrene, because when it develops amputation of the involved extremity is indicated. All patients should be warned against injuries to the feet and wearing of tight shoes. They should not use hot water bottles and must be extremely careful in cutting corns and trimming nails.

TRANSPLANTATION OF OVARIES

To the Editor:—A patient states that she had both ovaries and tubes removed and that she menstruated over a year after the operation. She now desires to know whether it is possible to transplant viable ovaries and tubes from another person to her broad ligament and uterus. She would like to have a baby of her own.

Is any surgeon capable of successfully performing such operations? My patient is willing to undergo operative intervention if there is a fairly reasonable chance of success.

Raymond M. Stover, M.D., Francesville, Ind.

ANSWER.—Neither the age of the patient nor the year of the operation is stated. If this patient had periodic bleeding for more than a year after her operation, she must have had some ovarian tissue left which functioned during this time.

There are many recorded cases of transplantation of a patient's own ovary or part of one from its normal location to a cornu of the uterus or within the uterine cavity. These are autoplastic operations. These operations are done for one or two reasons, namely to prevent menopausal symptoms and to permit pregnancy. Concerning the results of autoplastic operations, J. P. Greenhill (*Am. J. Obst. & Gynec.* **33**:39 [Jan.] 1937) says the following:

> Von Graff collected 66 cases in which a graft of ovarian tissue was placed on a uterine horn or on a tubal stump. He reported 14 pregnancies (21.2 per cent) following these operations. However, since only 5 of these pregnancies went to term, only 7.6 per cent of the operations, or 1 in 13.2 operations, resulted in a full term baby. Among the remaining 9 gestations, there were 6 abortions and 1 ectopic pregnancy. The outcome in 2 cases was unknown. In Von Graff's collected series of 41 cases in which an ovary was transplanted into the uterine cavity, only 3 pregnancies (7.5 per cent) resulted, of which 1 went to term (2.4 per cent) and the other 2 ended in abortion. Reiprich collected 200 ovarian transplants of all types and reported only 5 pregnancies (2.5 per cent) following these operations. Estes followed up 27 of 88 patients on whom he had performed his ovarian transplantation operation and found that pregnancy had occurred in 4 of them (15 per cent). In a later article, Estes reported that in a series of 50 patients whose case records were complete, only 4 became pregnant (8 per cent). Two of these women had abortions and 2 had full term babies.

No one has ever reported the transplantation of a tube or tubes from one woman to another, but transplants of ovary from one woman to another (homoplastic operations) have been made many times. In practically every instance the ovarian tissue was transplanted in order to prevent or overcome the distressing symptoms of the menopause.

As far as is known, the only case on record in which an ovary from one woman was transplanted into another and the latter became pregnant and gave birth to a living child was that reported by Robert T. Morris (*Med. Record N. Y.* **69**:697, 1906).

The chances of success in this case are so slight that an operation is not justified. Certainly if the patient is more than 35 years of age the idea of an operation should not be entertained.

DEXEDRINE

To the Editor:—What is the danger of using "dexedrine" for weight reduction? I believe 1 patient has diabetes produced by this drug. I do not prescribe it.

G. Raymond Johnson, M.D., Ottumwa, Iowa.

ANSWER.—Dexedrine is *d*-desoxyephedrine, a drug whose actions are qualitatively similar to those of amphetamine. Quantitatively, the drug has somewhat more central stimulating action and somewhat less circulatory action than amphetamine. In common with other sympathomimetic agents, *d*-desoxyephedrine can produce an increase in blood sugar level, which may be sufficient to result in a transient glycosuria. Evidence that use of the drug produces diabetes does not exist. If given to a person already suffering from the disease it may aggravate symptoms. Diabetes is a contraindication to its use.

The Council on Pharmacy and Chemistry has recognized amphetamine and *d*-desoxyephedrine as adjuncts in the treatment of some cases of obesity. These drugs may depress gastric motility, thus allaying the sensation of hunger and making it easier for the obese person to follow a rigid dietary regimen. Furthermore, the central action of these drugs may assist in overcoming certain depressive states which, in some patients, may be responsible for overeating. These drugs should not be used routinely in the treatment of obesity. Patients to whom they are administered should be closely observed by the physician for possible untoward effects.

METALLIC PINS FOR FEMORAL NECK

To the Editor:—Discuss reasons why pinning of fractures of the neck of the femur by metallic pins, such as the Smith-Petersen nail, results in anatomic failure. When a patient leaves the operating table with the head and neck of the femur in perfect anatomic alignment, why will these show dislocement three weeks later although the patient has been kept in bed without a cast?

M.D., Illinois.

ANSWER.—It is assumed that "results in anatomic failure" means: a displacement of fragments at the fracture site after what was thought to be perfect anatomic alignment resulting in incomplete apposition in one or more planes, angulation, separation; rotation of the head of the femur and untoward change in the angle of the neck of the femur, and/or with possible cutting through or retraction of the fixation nail. The reasons for any one or a combination of these subsequent findings may be listed in order of importance.

Failure to effect complete reduction of fragments and kissing coaptation of head onto trochanteric portion as shown by roentgenograms in at least two planes, anteroposterior and lateral: Even in a supposedly good reduction in the anteroposterior plane the cortical edges of the head and trochanteric fragment may not perfectly align; the lower cortical edge of the trochanter often overlaps or rides up under the edge of the capital fragment, thus interfering with reduction of the trabecular lines of the calcar femorale and possibly causing tilting or angulation of the head, which will slip further out of place very easily (and possibly lead to nonunion). This fault is often a result of failure to secure a sufficient amount of internal rotation of the femur.

Failure of the nail to penetrate sufficiently deep into the head of the femur: The pin may have been too short, or an unhappy angle of introduction of the nail through the trochanteric portion of the bone into the head may have occurred. The pin must skirt along the inferior cortical margin of the trochanteric portion and pass obliquely up into the head.

Failure to use a preliminary guide wire which penetrates and gently fixes the head after complete reduction in all planes: When such a guide wire is not used, the forceful driving in of the nail, as it reaches the fracture plane to pass into the head, may cause the head to angulate or rotate during its penetration.

Failure to check the position of fragments and nail by roentgenogram in at least two planes immediately after the nail is inserted.

Failure to impact the completely reduced fracture surfaces after the pin is inserted.

Multiple attempts to insert the nail: Its withdrawal and reinsertion may break down the cortical bone surface of one or both fragments, so that the bone does not hold well and permits angulation or rotation on slight motion or too early use of leg later, while the patient is lying in bed.

Failure of proper support or immobilization of leg after the most careful nailing: The leg may be supported in a Thomas leg splint in enough

suspension in internal rotation to hold its weight off the surface of the bed and with sufficient skin traction to aid this without pulling the fragments apart, or the patient may be placed in a body plaster of paris spica for four to six weeks to insure support of the leg in the correct position during the early stages of healing. Many surgeons have returned to this wise course of postoperative fixation by external splint.

Failure of careful postoperative supervision: Allowing the patient too much active motion of the limb, unguarded rough handling in nursing care or use of the bedpan, thus causing twisting and rotation of the limb especially outward, leads to strain on the nail support, which is exceedingly weak across the fracture plane.

Failure to furnish a properly supporting nonsagging bed surface or to force the patient too early into a sitting position, with the leg lying unsupported.

Failure of the nail to hold even though the insertion seems proper after complete reduction and good aftercare, because the bone is atrophic or highly demineralized and the holding friction against the surface of the nail is almost nil from the start.

Most troubles of this nature result from incomplete reduction imperfectly checked by roentgen ray and/or lack of suitable postoperative fixation and control. The operator must not allow himself to be satisfied short of complete check on all the factors mentioned, and the work must be done by one who is thoroughly qualified.

SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

To the Editor:—**Now that penicillin is becoming accepted in the treatment of syphilis of the central nervous system and numerous authors have confirmed the excellent results obtained with fever treatment in conjunction with penicillin, what is current opinion on the advisability of chemotherapy following fever and penicillin treatment.**

I refer to cases of syphilis of the central nervous system in patients with psychosis who must be hospitalized for fever treatment. Latest opinion seems to favor observation of these patients for a two year period without giving arsenic and bismuth preparations if the spinal fluid findings continue to be favorable. This treatment appears indicated if there is a reversal in the spinal fluid formula when chemotherapy is begun. Is it still not advisable to give intensive chemotherapy to such psychotic persons, in addition to fever and penicillin, regardless of the improvement which may be observed in the two year period of observation of the spinal fluid formula?

Dr. Dattner, Dr. Curtis of the Rochester group, Dr. Stokes of Pennsylvania and Dr. Moore of Johns Hopkins maintain that "retreatment" should be recommended if a "relapse" is indicated. What should be considered "a relapse" and what is the latest consensus concerning the use of tryparsamide in routine treatment of syphilis of the central nervous system? I understand that Dr. Stokes in 1944 stated definitely that it did not accomplish more than routine trivalent arsenic does.

I refer in the foregoing to cases of syphilis of the central nervous system without adequate chemotherapy preceding fever and penicillin treatment. If the patient had had adequate chemotherapy prior to such institutional treatment further chemotherapy may be of questionable value. However, in the absence of such previous chemotherapy, a two year course of chemotherapy appears indicated just as long as the spinal fluid formula has not completely returned to normal. As penicillin and fever treatment, without routine chemotherapy, has not been used for a sufficient period to be able to say that patients may not relapse years afterward, it would seem to me that one is not yet warranted in assuming that the future outlook for these patients may not be jeopardized by the failure to give routine chemotherapy after fever and penicillin.

M.D., California.

ANSWER.—The consensus among authorities before the introduction of penicillin was that chemotherapy should be used following fever therapy of paresis (Moore, J. E.: The Modern Treatment of Syphilis, ed. 2, Springfield, Ill., Charles C Thomas, 1941). In this country tryparsamide and bismuth preparations were usually given over a minimum period of two years. Tryparsamide was used because of the evidence of the inefficacy of trivalent arsenicals in paresis. Bismuth was used to help control syphilis outside the central nervous system because of the evidence that activity of such lesions might occur in patients whose paresis had been controlled by fever therapy. In patients who had had little or no chemotherapy preceding the induction of fever, courses of trivalent arsenicals were frequently also administered to help control syphilis outside the nervous system.

An authoritative opinion with regard to chemotherapy following the administration of treatment of paresis is given in Moore's monograph (Moore, J. E.: Penicillin in Syphilis, Springfield, Ill., Charles C Thomas, 1947). Authorities in this field with few exceptions have not advocated chemotherapy with arsenic and bismuth compounds after the administration of penicillin and fever, even though it is true that sufficient time has not elapsed to be sure that improvement in paretic patients will be in general well sustained.

There are several reasons for the change in attitude regarding prolonged arsenic-bismuth chemotherapy. 1. It is already clear that favorable effects of penicillin on lesions of late syphilis are not principally limited as with fever therapy to the central nervous system. 2. There is increased skepticism concerning the real effectiveness of tryparsamide in syphilis of the central nervous system. While the effectiveness of tryparsamide in paresis has not been adequately reinvestigated in recent years, studies such as that of Hahn and Clark (Hahn, R. D., and Clark, E. G.: Asymptomatic Neurosyphilis: Prognosis, *Am. J. Syph., Gonor. & Ven. Dis.* **30**:513, 1946) have emphasized the possibility that the effectiveness of tryparsamide in syphilis of the central nervous system has been overrated. 3. The influence of the Dattner-Thomas concept (Dattner, B.; Thomas, E. W., and Wexler, G.: The Management of Neurosyphilis, New York, Grune & Stratton, 1944) of spinal fluid changes associated with activity and inactivity of syphilis of the central nervous system has been felt. These workers, who had argued against the necessity of prolonged postfever chemotherapy in the treatment of paresis even before the introduction of penicillin, have advanced the concept that while pleocytosis, increased protein and abnormal colloidal test curves are associated with activity of the syphilitic process, positive serologic tests without abnormalities in protein and cells are not associated with activity. While it is true that many authorities are not willing to accept this concept as an invariable rule, it has certainly had considerable influence against the use of chemotherapy following penicillin-fever therapy of paresis.

All authorities advise close follow-up of treated paretic patients. Spinal fluid examinations should be done every six months for two years and preferably every three months during the first year. Indications for retreatment are unsatisfactory clinical improvement after six months' observation, clinical relapse or relapse in spinal fluid abnormalities. The prognosis of patients in whom retreatment is necessary is frequently poor. This is particularly apt to be true if in the first treatment the full course of fever (forty or more hours of fever over 104 F.) and high dosage of penicillin (6,000,000 units of penicillin or more over a period of fifteen days or longer) were employed.

In retreatment, fever therapy should be used, particularly if the previous fever therapy was inadequate, and penicillin dosage should be doubled and given over a longer period of time. Penicillin therapy may succeed the second time in spite of a previous failure, as is the case with early syphilis; tryparsamide therapy could also be given.

"SYNTROPAN"

To the Editor:—**Please discuss "syntropan" (phosphate salt of 3-diethylamino-2, 2-dimethyl-propanol tropic acid ester) as an aid to dilatation of the cervix in the first stage of labor. Has the drug shown clinical benefit in shortening the first stage of labor?**

Arthur Whitlatch, M.D., Milan, Ind.

ANSWER.—J. E. Stoll (*Am. J. Obst. & Gynec.* **42**:473-477 [Sept.] 1941) maintained that "syntropan" had a definite antispasmodic action in labor. In the patients on whom he used this drug, labor was on an average about one half as long as in the control patients. R. Cron, E. A. Banner and W. F. Hovis (*ibid.* **45**:295-299 [Feb.] 1943) found that there was only six minutes difference in the length of the first stage in women treated with "syntropan" and in the controls.

J. A. Wells, D. D. Albers and A. C. Ivy (*ibid.* **46**:222-229 [Aug.] 1943) performed animal experiments with the drug. They state, "The implication found in the clinical literature that syntropan hastens cervical dilatation by relaxing the cervix does not receive support from the present observation that this drug does not relax the cervix of the postpartum dog. . . . In all probability, cervical dilatation is a physiologic adjustment to the presenting part, and is accomplished by effective contractions of the body of the uterus. Therefore it would appear that hastening of cervical dilatation might best be accomplished by a drug which increased the effectiveness of the contractions of the body of the uterus."

VAGINAL SMEAR CANCER TEST

To the Editor:—**It has been called to my attention that Dr. Joseph V. Meigs of the Harvard Medical School of Boston and Dr. J. Ernest Ayre of the Royal Victoria Hospital of Montreal, Canada, have done some work on cytology along with Dr. George N. Papanicolaou of the Cornell University Medical College of New York in connection with the early diagnosis of cancer, particularly uterine cancer, by an examination of a vaginal smear. Is this an acceptable method of the diagnosis of cancer?**

Norman H. Smith, M.D., Minneapolis.

ANSWER.—The vaginal smear is apparently an accepted method of diagnosis of cancer of the cervix and ought to be accurate anywhere from 95 per cent to 100 per cent; the method is accurate in only about 80 per cent of cancers of the endometrium or body of the uterus. There are too few pathologists trained to perform a cytologic examination properly, and more should be thoroughly trained. Eventually cytologic diagnosis will fall into the same category as the diagnosis of tuberculosis of the kidney or of the lungs and also the Wassermann test.

KHELLIN

To the Editor:—What is the information on the use of Khellin in the treatment of bronchial asthma? This was recently mentioned in *Cosmopolitan* magazine and in *Collier's*.

M.D., Illinois.

ANSWER.—Khellin is one of several active principles obtained from Ammi visnaga Lam., an umbelliferous plant indigenous in the countries around the Mediterranean, whose fruits, under the name khella, have long been used in Egypt in the treatment of ureteral spasm and kidney stone (U. S. Dispensatory, 1943).

Khellin ($C_{14}H_{12}O_5$) is mentioned in the abstract (THE JOURNAL, June 28, 1947, p. 835) of the report of Anrep and his associates on Ammi visnaga for the anginal syndrome, published in the *British Heart Journal*, October 1946, page 171. These investigators, reporting from the Physiological Laboratory and the University Hospital, Cairo, Egypt, stated that the crystalline preparation of khellin which they used was obtained from Professor K. Samaan of the department of pharmacology of the University of Cairo and from the Physiological Laboratory of this institution. An early report by Samaan appears in the *Quarterly Journal of Pharmacy and Pharmacology*, London, 1932, page 6; a preliminary report by F. A. Upsher Smith of Ammi visnaga appears in the *Journal of the American Pharmaceutical Association*, March 1933, page 184; the U. S. Dispensatory also provides a brief discussion of the drug.

Apparently the drug has recently been used experimentally in the treatment of asthma and also as a coronary vasodilator. A brief note in *Lancet* (London), May 17, 1947, page 682, is concluded with the following paragraph:

"That khellin may have further uses is suggested by the observation that after a single intramuscular injection of 200 to 300 mg. 'complete and prolonged relief' was obtained in 41 of 45 patients with severe bronchial asthma; and even this fairly large dose had no effect upon the blood pressure. It has, moreover, relieved attacks resistant to adrenaline and aminophylline. Whether, as suggested, khellin is safer than aminophylline is not yet certain, for experience with it is so far small. If, however, khellin is to come into general use preparations of it must be purified and standardized, for there is some evidence that the impurities in Ammi visnaga may be toxic."

These reports, though promising, do not provide adequate evidence on which to base a satisfactory evaluation of the therapeutic worth of khellin in the management of asthma, and until further confirmatory studies with suitable controls become available the status of the drug must be considered to be in the experimental stage.

Information is not available to show that khellin or any other active principles of Ammi visnaga are available commercially in this country, nor is there knowledge of any efforts which the Egyptian Chemical and Drug Industries of Cairo, apparent promoters of the drug, may have made to secure the introduction and therapeutic trial of its preparations "visammimix" and "khellinin" in the United States.

RETCHING AND ARSPHENAMINE

To the Editor:—What will prevent retching after intravenous arsphenamine treatment?

S. Englander, M.D., Cleveland.

ANSWER.—Retching after an intravenous injection of arsphenamine is not a common complaint. It might be due to a psychic effect rather than the arsenic. Eating of peppermint candy at the time of the injection is said to be of help. Otherwise, it would seem that a small dose of sodium bicarbonate would be sufficient.

SLUDGING OF BLOOD

To the Editor:—Have observations been published regarding the combined use of anticoagulants and penicillin in infectious diseases? In view of recently published studies on the sludging of blood in the arterioles in infectious diseases would not such therapy appear to be a logical conclusion? Is it possible by improving circulation in the capillary bed with anticoagulants to enhance distribution of penicillin? In infectious diseases in which anticoagulant therapy was used because of concomitant thrombophlebitis it was my impression that the combination therapy shortened the illness.

Fritz F. Blumenthal, M.D., Middletown, N. Y.

ANSWER.—Thus far nothing has been published regarding the combined use of anticoagulants and penicillin in infectious diseases. It would seem theoretically that such a method of treatment might be advantageous because of the sludging of blood in the arterioles which has been reported to occur in a number of acute infectious diseases. If an anticoagulant was to be given in the manner that you suggest, it would undoubtedly be necessary to administer it early in the course of the infection. Further studies may confirm the impressions that you hold in this respect.

"PITRESSIN TANNATE"

To the Editor:—Please comment on the feasibility of "pitressin tannate in oil" for the treatment of hypertension, as advocated by Dr. John Q. Griffith of Philadelphia. Likewise, his recommendation of roentgen radiation of pituitary. Is the clinical evaluation which he places on bioassay of urine in hypertensive persons valid? For instance, is the high incidence of what he calls "excess amount of anti-diuretic principles of post pituitary gland" in hypertension as common as he claims? Can "pitressin tannate" be used in hypertensive heart disease accompanied by coronary sclerosis with safety? Is the clinical evaluation which he places on plasma creatinine physiologically sound? Explain the clinical use of rutin.

M.D., N. Y.

ANSWER.—The theoretic concept applied to justify the use of "pitressin tannate in oil" in the treatment of hypertensive disease is based on several only partially validated assumptions. It is conceived that the introduction of beta-hypophamine ("pitressin") depresses the secretion of the pituitary and that such depression may persist following withdrawal of the injected, additional hormone. There is, however, no assurance that such injections may not aggravate the situation. "Pitressin tannate" should not be employed in the presence of detectable coronary sclerosis, anginoid symptoms, retinitis, pregnancy or impaired renal function. These are definite contraindications. The indications are much more vague.

Radiation of the pituitary in hypertensive disease is not a new procedure. It was advocated by Hutton in 1934 (Hutton, J. H.: *Illinois M. J.* **66**:120 [Aug.] 1934) and since then has been periodically in vogue with a few clinicians. Rationale is based on an assumption whose validity is open to considerable doubt. Bioassay of pituitary pressor substance in either blood or urine is as yet not sufficiently sensitive to be satisfactory; the antidiuretic principle can be assayed, and it is assumed that variations in the content of antidiuretic principle reflect parallel variations of the pressor principle. It is notable that many patients with demonstrable hyperfunction of the posterior pituitary do not have hypertension; similarly, diabetes insipidus is not characteristically associated with either hypertension or hypotension. (Pendergrass, E. P.; Griffith, J. Q., Jr.; Padis, N., and Barden, R. P.: Indications for Irradiation of the Pituitary Gland in Patients with Arterial Hypertension, *Am. J. M. Sci.* **213**:192 [Feb.] 1947).

A fairly exhaustive search of recent literature indicates that there is no convincing confirmation of the clinical values of bioassays of the urine in hypertensive disease. It is extremely doubtful, in view of observations made in connection with diabetes insipidus as well as hypertensive disease, that excessive amounts of antidiuretic principle are common.

Rutin has definite value in diminishing capillary fragility, which is often increased in hypertensive disease because of the histanoxia due to reduced capillary flow distal to constricted arterioles. (Griffith, J. Q., Jr.: Increased Capillary Fragility in Hypertension, *Am. Heart J.* **28**:758 [Dec.] 1944). It is indicated only when testing reveals definitely a capillary fragility (Griffith, J. Q., Jr.: *Proc. Inst. Med. Chicago* **16**:434 [Oct.] 1947). The evaluation of clinical results with rutin is extremely unsatisfactory, because the major purpose is the prevention of capillary hemorrhage and therefore control studies are not feasible. Increased capillary fragility is not uncommon in states other than hypertensive disease: infection, fatigue, menstruation and allergic reactions (Brown, E. E.: Diseases Associated with Low Capillary Resistance, *Am. Heart J.* **34**:241 [Aug.] 1947). In cases in which extreme hypertension exists, or when the hypertensive presents coincident infection, allergic reactions or excessive fatigue, it should be useful in reducing the probability of capillary hemorrhage, particularly in the brain, retina or kidneys.

It should be emphasized that arterial hypertensive disease is a disorder with many etiologic factors and that the causative factors are not necessarily the same in any two cases. Control therapy, as well as curative or prophylactic therapy, must be based on individual etiologic analysis as far as possible. No one will discover a universal single cause for hypertension; there are always many contributing causative factors, not the least of which is hereditary vulnerability of the vascular structures. Treatment must be as individualized as etiology, and it must not be forgotten that with hypertension, as with most other disorders, it is much more important to treat the patient who has the disease rather than to treat the disease and ignore the patient.